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THE ECONOMIC JOURNAL

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Edited by R. F. HARROD *and* E. A. G. ROBINSON

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THE ECONOMIC JOURNAL

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EXPECTATION AND CARDINALITY

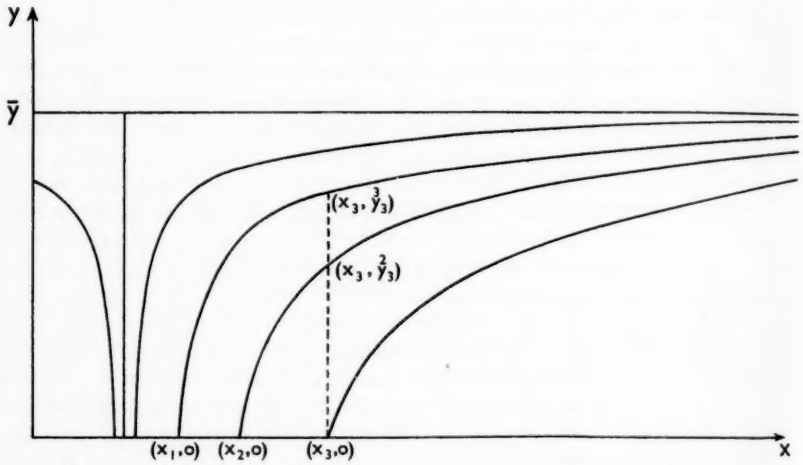
I BELIEVE it is sometimes said that if we are to be able to claim that a given variable is cardinal, we must provide it with a unit interval and a zero point. If, by the nature of what we seek to measure, only one possible unit and only one possible zero point offer themselves, cardinality is complete. For some purposes, however, we shall be content, on a certain condition, with a lesser cardinality in which those two elements can be arbitrarily chosen; this condition is that the expression of a given magnitude in terms of one pair of these elements can always be re-expressed in terms of any other pair merely by a linear transformation. In the context with which I am specially concerned, the matter has presented itself to me from a somewhat different angle; for it seems to me that when the variable is *potential surprise* we are presented with not only a natural and inevitable zero point, the meaning of which will be the same for everybody, but also with another magnitude which satisfies this same condition of *absoluteness of meaning*, viz., the absolute maximum of potential surprise which I have habitually denoted $\bar{y}$. Now if $y = 0$ and $y = \bar{y}$ have fixed and universally constant meanings, and are distinct from each other, then if we can regard this distinctness as implying that they are separated by an interval, is not this a natural interval of fixed meaning which could meet the second of the two requirements of full cardinality? Plainly it cannot, for the entire range of the variable, to which we assign any meaning, is encompassed by and is identical with this interval. Thus it seems to me that, at any rate in my own context, the problem is to find some principle or method of *subdividing* the natural interval with which the context provides us. It is not appropriate or sufficient, as in some other contexts perhaps it may be, to assume that if the meanings of any two integers, taken to represent values of our variable, are fixed, then all other rational numbers will thus directly and automatically have their appropriate meanings assigned to them.

Our logical first step is to decide what conditions our principle of subdivision must satisfy, and to decide this we must consider what is our purpose in seeking to render cardinal, in some sense, the variable I have called "potential surprise." This purpose is analytical and descriptive. If an enterpriser chooses one rather than another of several technically specified investments that are open to him, we wish to be able to see this act as the consequence of several distinct elements, viz., some characteristics of his own

temperament and some judgments that he makes about the range of different consequences which might follow from his committing his resources to this investment or that. Again, let us suppose him to have in mind three hypothetical outcomes, of respective face value x_1, x_2 and x_3, with degrees of potential surprise respectively y_1, y_2 and y_3 (see Fig.). Let us suppose that $x_1 < x_2 < x_3$, and that initially $\overset{1}{y}_1 = \overset{1}{y}_2 = \overset{1}{y}_3 = 0$, so that [1]

$$\phi(x_1, 0) < \phi(x_2, 0) < \phi(x_3, 0)$$

Then let us imagine his knowledge and inferences to change so that the outcome x_3 comes to be associated with such a degree $\overset{2}{y}_3$ of potential surprise that



$\phi(x_3, \overset{2}{y}_3) = \phi(x_2, 0)$. Suppose, further, that his knowledge and his interpretation of it again change so that now x_3 is assigned $\overset{3}{y}_3$ such that $\phi(x_3, \overset{3}{y}_3) = \phi(x_1, 0)$. Finally, let us suppose that the change of information which assigns to outcome x_3 the degree of potential surprise $\overset{3}{y}_3$ occurs as it were in one movement, without the intervention of any stage where x_3 is associated with $\overset{2}{y}_3$. In the whole set of events that we have now imagined there are involved three distinct *differences* of degree of potential surprise, viz.,

$$\overset{3}{y}_3 - \overset{2}{y}_3 \quad . \quad . \quad . \quad . \quad . \quad \text{(i)}$$
$$\overset{2}{y}_3 - \overset{1}{y}_3 = \overset{2}{y}_3 \quad . \quad . \quad . \quad . \quad \text{(ii)}$$
$$\overset{3}{y}_3 - \overset{1}{y}_3 = \overset{3}{y}_3 \quad . \quad . \quad . \quad . \quad \text{(iii)}$$

Then we wish to find some principle or method of subdivision of the range of definition of potential surprise, such that the sum of (i) and (ii) is equal to

[1] ϕ here stands, as in my *Expectation in Economics*, for the "attention-arresting power" of various "elements" (x, y).

(iii). It is in this sense that we must, I think, seek a *consistently additive* cardinality for potential surprise.

This introduction of the word " additive " in connection with potential surprise compels me to digress for a few moments, for there is another, and an essential, sense in which, as I have taken pains elsewhere to emphasise, potential surprise is non-additive.

If it is possible, *a priori* or empirically, to establish a table of the relative frequencies with which we obtain each distinct result out of an exhaustive set of possible results when some defined class of trial or performance is indefinitely repeated, and if some valuation is put on each distinct result, the so-called " mathematical expectation " is reckoned, in a way which is familiar to all of us, by multiplying the valuation of each contingency by its relative frequency, the latter being expressed as a proper fraction such that all the relative frequencies together sum to unity, and adding the products so obtained. The idea of the frequency-table has often been transferred from its proper use as a statement of " objective " knowledge about the outcome of an experiment consisting in the totality of some " large " number of trials, to an entirely different use for which it seems to me to be in several respects quite unsuitable, namely the description of a person's uncertain state of mind about the question what will come of a single unique or isolated act of his own. However, when our formal basis of discussion of uncertainty is the frequency-table, our process of thought involves *addition*, the summing and averaging of items each corresponding to a distinct contingency. It is addition for this sort of purpose which is entirely absent from my own construction based on potential surprise. My own construction recognises the different possible or conceivable results of a unique or isolated experiment (what I have elsewhere called a *non-divisible non-seriable* experiment) as mutually exclusive rivals the attempt to add which is a contradiction of their essential meaning.

Let us return to the problem of how to subdivide the range within which potential surprise is defined, the closed interval $0 \leq y \leq \bar{y}$. A proposal which introspection has strongly recommended to me is one which was made by Mr. W. E. Armstrong in 1939 in the context of utility theory.[1] Mr. Armstrong's idea as I understand it could be expressed as follows. In a given set of circumstances, I find that I prefer a cup of tea to a cup of coffee, and also that I prefer a cup of coffee to a cup of cocoa. But I also have a definite feeling which I can best express by saying that the difference between what the cup of tea does for me and what the cup of coffee does for me is less than the difference between the subjective benefit I get from the cup of coffee and that which I get from the cup of cocoa. The utility of the coffee can thus be said to be in some real sense *nearer* to that of the tea than that of the cocoa, there is an *interval* between the utility of the tea and that of the cocoa which is unequally divided by the utility of the coffee. Now if (Mr. Armstrong's argument proceeds) I can find some other object of consumption

[1] " The Determinateness of the Utility Function," by W. E. Armstrong, ECONOMIC JOURNAL, September 1939. I believe a similar suggestion had been made by Professor Frisch at an earlier date. Mr. Armstrong, however, arrived at his ideas quite independently.

concerning which I cannot decide whether its utility is nearer to that of the tea or that of the coffee, it can be claimed that this new utility exactly halves the interval. Each half of the interval can be similarly halved, and so on until, perhaps, a limit is set by my reaching the smallest difference between utilities which I can discriminate.

Does this method of subdivision furnish what I have called a consistently additive cardinality? We must notice that this question is not the same as the question whether the sub-intervals obtained by Mr. Armstrong's method are all equal in the same sense that the centimetre divisions on a scale of length are equal. The latter can be proved equal by being each compared with one and the same marked centimetre interval on a separate object which can be moved from one part of the length-scale to another. In our context and in that of utility no such procedure is possible. Yet by the nature of Mr. Armstrong's method it follows that, so long as my own subjective criteria, the correspondence in my own temperamental make-up between certain material states of affairs and certain feelings, remain stable, the additive test we have proposed is always met. For suppose I have in mind four objects of respective utilities $u_1 < u_2 < u_3 < u_4$ and that for the purpose of constructing a scale on Mr. Armstrong's principle I take the interval between u_1 and u_4 as my unit interval. Suppose also that u_2 and u_3 occupy the points obtained by the second halving operation in Mr. Armstrong's process of repeated halving, so that u_2 is " one-quarter " of the way from u_1 to u_4 and that u_3 is " three-quarters " of the distance from u_1 to u_4. Is it now necessarily true that the " distance " from u_1 to u_3 is the sum of the distances from u_1 to u_2 and from u_2 to u_3? Yes, for both u_2 and u_3 were determined or fixed with reference to the mid-point (in Mr. Armstrong's sense) of the unit interval separating u_1 and u_4. Let us call this mid-point u_M. Then if we start, as it were, from u_M and traverse a certain distance in one sense we reach u_2, while if we traverse a certain distance from u_M in the opposite sense we reach u_3. Having reached u_3, we can plainly reverse the sense of the movement and go right back through u_M to u_2 and on to u_1. It follows, I think, that we have in Mr. Armstrong's principle a means of obtaining a consistently additive cardinality in the sense which I have tried to give these words above.

We have *a* cardinality. But, according to Professor Carter,[1] whose criticism was the main cause of my attempting this exploration of the subject, it is not sufficient for my purpose to show that potential surprise can be cardinalised, I must show that there is one and only one cardinal scale. For let us assume that the function, according to which ϕ depends on gain or loss, x, and on potential surprise, y, is simply the product $x.\frac{1}{y}$. Then if, for example, two amounts of gain, $x_1 = 16$ and $x_2 = 27$, are respectively associated with degrees of potential surprise represented, on one scale, by

[1] " A Revised Theory of Expectations," by C. F. Carter, ECONOMIC JOURNAL, Vol. LXIII, No. 252, December 1953, reprinted in *Uncertainty and Business Decisions*, ed. Carter, Meredith and Shackle (Liverpool University Press, 1954).

4 and 9, the corresponding values of ϕ will be $\phi_1 = 16 \times \frac{1}{4} = 4$, and $\phi_2 = 27 \times \frac{1}{9} = 3$. But if we regard the particular scale by which we have assigned numerical values to particular degrees of potential surprise as simply *one* scale out of many, and if, for example, we assume that any monotonic increasing or decreasing function of that first scale will serve equally well, we might instead have $\phi_1 = 16 \times \frac{1}{2} = 8$ and $\phi_2 = 27 \times \frac{1}{3} = 9$. Thus by choosing a different scale for y we should have reversed the size-ranking of ϕ_1 and ϕ_2.

The fact that several different methods have been proposed for demonstrating the measurability of utility, or the " determinateness (that is to say, the uniqueness) of the utility function," may well set up in our minds a presumption against such uniqueness, not merely in regard to utility, the only context in which there has been any general discussion of the matter, but in any similar context, such as that of potential surprise. For is there any reason *a priori* why different methods should lead to the same result? In a luminous article [1] Mr. D. Ellsberg has indeed pointed out that if two concepts are defined by two different operational procedures they are in strictness two different concepts, and the onus of proving them to be effectively identical, in any context or argument, lies on the person who wishes to treat them so. Mr. Ellsberg's article is admirably lucid, exact and thorough, but its subject matter is inherently so difficult that perhaps I may be excused for having still in mind, after several readings, a number of points on which I do not feel quite clear or satisfied. His main concern is with two possible operations in particular, by which some concept of cardinal utility might be defined, namely that of von Neumann and Morgenstern consisting in the observation of a person's choices in so-called " risk situations," and that which the neo-classical economists such as Jevons had in mind, consisting in the subjective " weighing " by the person himself of the amounts of satisfaction associated with different events. I must confess myself here still puzzled by what is meant by a " risk-situation." What precisely is it that the person has to do? He is offered the choice between, for example, the certainty of receiving a stated sum of money B, on the one hand, and a lottery ticket which will give him " with a probability " p a sum $A > B$ or " with a probability " $(1 - p)$ a sum $C < B$. Does this mean that if he chooses the lottery ticket the lottery will be drawn *just once* and he will in fact receive either A or C? If this is indeed the meaning, whatever can be meant by saying that he will receive A " with a probability " p? The interpretation he puts on this statement must be entirely subjective, something evolved in his own mind and different, in general, from the interpretation which would be put on it by another person. There seems to me to be no ground on which we could say that if, for example, $p = \frac{1}{2}$ and $\frac{1}{2}A + \frac{1}{2}C = B$, he " ought " or " it would be rational " to be indifferent between the sure outcome B and the lottery ticket $(A, p; C)$. We simply do not and cannot know, without further information, what a lottery ticket in this sense of a *unique* drawing means to him,

[1] " Classic and Current Notions of ' Measurable Utility,' " by D. Ellsberg, ECONOMIC JOURNAL, Vol. LXIV, No. 255, September 1954.

what its essential quality or significance in his mind is. The idea " *A* with a probability p " involves *two* subjective elements and not one, the so-called probability cannot play the role of something objective that will enable us to pin down a single remaining element of " satisfaction," this probability is no more, *at most*, than the objective base or correlate of a dimension or aspect or element of *feeling*, that very strand of feeling to which I have sought to give precise definition under the name of potential surprise. Thus to me Mr. Ellsberg's insistence that we cannot treat the " utility " arrived at by von Neumann and Morgenstern's procedure as being identical with that resulting from Jevonsian introspection, is rather like an insistence that we cannot discover the altitude of a mountain peak by manipulating its latitude and longitude.

Suppose, however, that the meaning of the lottery ticket is quite different, and that instead of being drawn just once the lottery is going to be drawn, say, 10,000 times, so that the probability p means a statistical frequency which will be approximately realised in fact. In this case if the lottery ticket offers, for example, £1,000 with a probability of $\frac{1}{4}$ and £200 with a probability of $\frac{3}{4}$, the actuarial valuation of the lottery ticket is £250 + £150 = £400, and this is what, to a quite good approximation, the person can look forward with virtual certainty to receiving. But on what ground, in this case, can we speak of a risk situation?

How fallacy can flow from this ambiguity of the expression " a risk-situation " is most strikingly illustrated by Professor Wold in his note on " Ordinal Preferences or Cardinal Utility? " in *Econometrica*, Vol. 20, No. 4. This Note Mr. Ellsberg dismisses without any reasoning or discussion whatever, with an *ipse dixit* which seems something of a blemish on his otherwise fine article. The assertion " The argument . . . by H. Wold . . . is definitely invalid " ought surely not to have been made without a demonstration that would have rendered the word " definitely " superfluous.

My contention is, then, that if von Neumann and Morgenstern's operation, by which they seek to define utility, refers to a *unique* lottery drawing, the resulting observed behaviour will spring from the *combined* effect of two subjective judgments, one concerned with degrees of belief in outcomes and the other concerned with degrees of satisfaction arising from given face-values of outcomes, and that it will be impossible, by observation alone of the kind Mr. Ellsberg and others have in mind, to disentangle the effects of these two elements. If, on the other hand, von Neumann and Morgenstern have in mind an indefinitely long series of drawings of the same lottery, then risk and uncertainty are eliminated and the proposed method breaks down in the way that I think is implied in Professor Wold's note.[1]

However, even if we claim that, whatever is distilled by von Neumann and Morgenstern's operation, this distillate is not pure utility or satisfaction and that their procedure cannot be included in the list of methods of car-

[1] Uncertainty enters only in regard to the *temporal sequence* in which the various outcomes will occur, a matter which, as Professor Wold has pointed out in his Note in *Econometrica*, is quite inadmissible when we are considering a static model.

dinalising utility, still this elimination of one suggested method does not imply that there are no others. Mr. Armstrong himself has in fact suggested an alternative to his first method. He proposes to use as the cardinal unit of utility the *smallest discriminable difference* between utilities. This method would indeed eliminate altogether the difficulty, if it be one, that even when we have established a unit for measuring the intensity of some mental phenomenon such as satisfaction or potential surprise, we may need, and be unable, to propose a method of sub-dividing it. Plainly, we can attach no meaning to the idea of sub-dividing the least discriminable difference. If Mr. Armstrong's second method can be validly applied to certain psychic variables, it follows that these variables are in fact discontinuous, and only a discontinuous cardinality can be established for them. It is not evident that such variables would entail any greater strain on our consciences, when we apply to them the methods of the differential calculus, than such things as population or money value do already.

But the real question I have to face is whether Mr. Armstrong's two methods are bound to give us concepts of cardinal utility, or in my own context, of cardinal potential surprise, which it will be legitimate for us to treat as identical. I feel bound to ask whether, in supposing it to be possible that there are many different cardinal utilities, we are not losing sight of psychic reality, the character and essential processes of the human mind, and allowing ourselves to be led astray by considerations of technical mathematical or logical procedure. It is true that, for example, the "distance" between two points in any space can be measured, if we will, along any number of different paths, and we are quite at liberty, in the abstract, to postulate any space. But the physical space of nature, whether it be Euclidean or of some non-Euclidean variety, is surely of a *unique* character, and gravity or whatever we care to call the principle which manifests itself in the apparent behaviour of massive objects operates in just one and only one way, and it operates in just one and only one kind of space, whatever that kind may be. Can we suppose that the structure of human thought, feeling and consciousness is any more capricious and "multi-principled" in its essential nature than the physical universe?

I have one suggestion to make, in regard to the particular question whether Mr. Armstrong's two methods will lead us to one and the same or to two different cardinal utilities. I wish to suggest what may seem to you a rather far-fetched analogy, and I wish to ask whether in this matter we could not usefully pay some attention to the difference between the methods open to us for measuring, say, length or mass and those open to us for measuring *time*. In measuring length in practice we are absolved from any need to resort to methods essentially involving *integration*, but when we measure time by means of clocks, candles or sand glasses we are, it seems to me, using a principle closely bound up with integration, and even if we measure time by observing the different positions of the sun, or of its shadow on the sun-dial, we are in effect assuming that the sun moved from one position to the other by traversing (as it were) the distance between those positions "a bit at a

time," at a speed corresponding, of course, to that of the earth's rotation. Now can we not imagine a person who is contemplating the degree of utility, or of potential surprise, associated with some event or state of affairs allowing himself to traverse in his own mind the distance separating that degree from some other definite degree, such, let us say, as zero potential surprise, by a series of steps each of the smallest size he can discriminate? If so, we can imagine him to make the following experiment: Having selected two particular levels of utility or of potential surprise, he first selects by a direct and immediate judgment the mid-point, in Mr. Armstrong's sense, between them. He then proceeds to move, as it were, from one of the initial levels towards the mid-point, reckoning the distance by some process rather like that by which we subjectively reckon *duration* in time, or even, if you like, by counting the number of the *minima sensibilia* he needs to carry him to the mid-point. Lastly, he moves from the mid-point to the other of the two initially selected levels and again reckons the distance by this process of quasi-integration. Will the two distances thus reckoned, between the two initial levels and the mid-point selected by direct judgment, turn out equal? I do not assert that they will, I scarcely venture to assert that the experiment that I have described has a clear meaning, but if it has I see no reason why the two distances should not be equal.

However, my real answer to Professor Carter's objections is not along the lines of technical analysis. The solution appears to me to lie in a radically different argument concerned with the essence of the matter rather than with formal analysis of it, and this argument can perhaps be best introduced by means of a brief anecdote. In a certain village the grocer and the baker lived just opposite one another. One day the baker entered the grocer's shop in a state of high indignation, and charged his neighbour with repeatedly selling him bags of sugar that were several ounces short in weight. " I am really very sorry," replied the grocer, " but the fact is that I always weigh out my sugar by putting one of your loaves in the other pan of the scales." In assigning numerical values to certain intensities of feeling we are at most making explicit a cardinality which may already reside in these intensities. The cardinality itself, if it exists, is a psychological reality. If cardinality inheres in the intensities of one kind of feeling, in one emotion, it must surely inhere in all. But if we admit this, can we then suppose that any kind or aspect whatever of reality can be reflected by the practice, which Professor Carter's argument would by implication make legitimate, of adopting one unchanging method of conferring explicit cardinality upon one variable, representing one emotion, while holding ourselves free to use in combination with it any one of several methods of making explicit the cardinality of another variable representing some other feeling? The two feelings must surely in the nature of things be linked with each other like the measures used by the grocer and the baker in my story. Or perhaps we can say, they are linked in the same way as the measures of length we use in reckoning the volume of a cuboid. If we decide to measure the length of the cuboid in centimetres, we shall not feel free to measure its breadth and height

in centimetres or in inches as the fancy takes us, and then express the volume as the product of the resulting three numbers without any explanation.

Surely we must believe, if we are to make sense of life at all, that nature guarantees us against making a *practical* mistake of the kind that would be possible if the human mind itself were free to use, as it were, one method of " measuring " one kind of feeling and some other method of " measuring " another kind of feeling, in such a way that its judgment, which is the greater of two values of some variable depending on both these feelings, could be made *inconsistently* at different times. In saying " inconsistently " I mean, of course, *differently* without any justifying change in the person's knowledge, inferences or tastes. And this brings me back to my statement that my purpose, in seeking to show that potential surprise can be treated as a cardinal variable, is analytical. The task we are charged with is not that of *designing* the human mind but of *describing* and understanding how, overtly, it proceeds.

G. L. S. SHACKLE

Liverpool University.

FOREIGN INVESTMENT AND THE GROWTH OF THE FIRM [1]

I

SUCH is the desire for an accelerated rate of capital formation in most of the less-industrialised countries to-day, that fears about the ultimate problem of servicing foreign capital invested in the country are often pushed, rather uneasily, into the background, while inducements are held out to attract such capital, in particular to attract private direct investment. In Australia, however, a recent event has emphasised once again the controversial aspect of foreign investment when the investment takes the form of the successful establishment of a foreign subsidiary enterprise in which the ordinary capital, or common stock, is largely held abroad. Most successful firms grow, and if a firm grows by virtue of its own earnings, that is to say, if the rate of new investment in the firm does not exceed the rate of earnings on its past investment, then the foreign equity in the firm grows without any net import of new foreign exchange—*i.e.*, foreign investment in the firm is increasing while there may be a net outflow of foreign funds.

Thus, a relatively small initial dollar investment, for example, may establish a firm whose earnings are sufficient to permit extensive expansion through ploughed-back profits, each increment of expansion increasing the foreign liabilities of the country. It is therefore likely that dividend remittances, when they become an important proportion of profits, will be enormously high in relation to the original dollar investment, although not necessarily high in relation to the total foreign investment in the firm. This paper is concerned with the economic implications of this form of foreign investment for the economic policies of some of the less-industrialised countries to-day.

We shall consider first the particular case of General Motors–Holden's Ltd. in Australia, secondly, the general question whether it makes any difference if foreign investment takes place through the expansion of existing foreign-controlled firms rather than in some other form, and finally what solutions, if any, there are to the problems raised.

General Motors–Holden's in Australia

With the publication of its Annual Report for 1954, General Motors–Holden's Ltd., the Australian wholly-owned subsidiary of General Motors Corporation in the United States, raised a hornet's nest of controversy about its corporate ears, and became more firmly than ever committed to the

[1] I want to acknowledge here the criticism of the staff of the Economics Department of the Australian National University, and in particular that of Professor T. W. Swan, who saved me from some serious errors in the latter part of the paper. I am also indebted to Professor Fritz Machlup and to Professor E. F. Penrose for much helpful criticism, and to the John Simon Guggenheim Memorial Foundation for granting me a Fellowship for research in Australia.

necessity of convincing the Australian public that "What's good for General Motors is good for the country." The storm arose over the revelation that: (*a*) GMH made a profit A£9,830,000 after taxes in 1953–54, which is variously portrayed as 560% on ordinary capital (the ordinary capital representing in this case the original dollar investment of GMH), 39% on shareholders' funds (net worth), 24% on funds employed or 14% on sales, depending on how the speaker feels about the size of the profit; and (*b*) that a dividend was declared to the parent company of A£4,550,000, which again is 260% on ordinary capital, 18% on shareholders' funds or 11% on funds employed.[1] The dividend declared is about 8% of the dollar export receipts in the Australian balance of payments for 1954–55.[2]

Newspaper stories and editorials critical of the profit (the highest ever declared by a firm in Australia) and of the dividend payment were followed by an attack by Dr. H. V. Evatt, Leader of the Labor Party (the Government Opposition) on the GMH "Colossus," and letters pro and con appeared in the correspondence columns of the Sydney and Melbourne Press. Economists immediately began debating the issues raised for the Australian economy, and H. W. Arndt, Professor of Economics of Canberra University College, stated on the air "As far as policy towards future overseas investment in this country is concerned, the Holden case may induce some caution in giving indiscriminate encouragement." He suggested that Australia might do well to "concentrate less on attracting American capital and more on hiring American technical and managerial know-how."

The background of the General Motors situation is as follows: The firm began in Australia in 1926 with chassis-assembly plants in various States, and in 1931 bought out the Australian-owned Holden's Motor Body Builders Ltd. with an issue of Preference Shares. Until 1945 the combined firm was engaged in building bodies and assembling imported chassis units, but in that year began planning the manufacture in Australia of the Holden car. This car appeared in 1948, and has steadily gained a larger and larger share of the automobile market in Australia.[3] All Australian produced, it is the cheapest and most popular car in its class (medium weight—by Australian standards—and in the middle price range). GMH has been unable to produce enough cars to meet demand at existing prices, and the waiting list was announced as being equal to twelve months production. In 1953–54 the retail price of the car was reduced by A£84, or 7%. Further reductions in price would only intensify the shortage and put profits in the hands of "grey-market" dealers. (It is alleged that at present prices many people buy new Holdens and immediately resell them at A£100 profit.)

Along with the release of the Annual Report, expansion plans were

[1] The par value of the ordinary shares is A£1,750,000; there are in addition A£561,600 of Preference Shares owned by Australians. The net worth of the company (or shareholders' funds) is A£25 million; total funds employed are A£41 million.

[2] There is a 15% tax on dividends, and hence the actual dollar remittance was less by this amount.

[3] From 1953 to 1954, however, the Holden share of the market actually declined from 36·5 to 35·1% as a result of the inability of the company to keep up with the demand in an expanding market.

announced involving a 50% increase in production of the Holden (from the present 65,000 a year to 100,000), expansion of the household and commercial refrigeration business and entry into the production of central-heating units and other household appliances. The planned expansion is estimated to cost A£21,622,000, bringing the Company's post-war expenditure on new plants and facilities to A£47,750,000 and the funds employed in the business to more than A£61 million. (The total assets of the largest firm in Australia, a firm which comprehends the entire steel industry, were A£76·4 million in 1954.)

GMH has successfully established a completely Australian automobile,[1] thus reducing import requirements for automobiles and promoting efficient industrialisation. In other words, it has done "just what the doctor ordered"; for the promotion of industrial development by "import replacement" through efficient home production is established national policy. But if the post-war rate of expansion continues for long GMH will not only be far more important in the automobile market than all other producers combined,[2] but will also be reaching out into more and more industries. This continued expansion will not involve any further import of dollars; on the contrary, it will be accompanied by an ever-increasing stream of dollar dividends paid out as the equity increases on which the dividends are paid. Taking the ten-year period 1945–54, total profit of GMH was about 10% on sales and 27% on the average capital over the period, but 72·4% of the profit was retained in the business.[3] And there is little reason for believing that either smaller increments of expansion or lower earning rates are going to mark the reasonably foreseeable future.

At first sight it might seem that the problem is basically one of monopolistic profits; the task, accordingly, being to increase the amount of effective competition in the automobile industry. In general, and in spite of the periodic pronouncements of the Labor Party against "monopolies," neither the Australian Government nor the Australian public tend to be much concerned about monopoly as such. There is a very high degree of "concentration" in the economy—the largest seventy-five firms owning nearly 45% of the total fixed assets in manufacturing.[4] The steel industry

[1] As the saying goes, "Australian except for the key"—which is made in Wisconsin.

[2] The three largest producers are GMH, Ford and British Motors Corporation. Since 1949 the GMH share of the market has risen from 23 to 35½%, that of Ford from 14 to 21%, while that of BMC has fallen from 31 to 20%. Thus the "Big Three" have 76% of the market, and Ford and GMH together have risen from 37 to 54%. Of these only GMH publishes a balance sheet in Australia; nothing is known about the profits of the other two.

[3] Consequently, the actual dividends paid out have not until this year been appreciable, only some 7·4% on the average capital employed in the ten years. But this, of course, means that the equity upon which profits are expected to be earned and eventually realised in significant amounts is so much the greater. From now on it may be expected that the GMH dividend will remain high.

[4] This figure is subject to a fair margin of error because some of the largest companies in Australia are subsidiaries of foreign firms and do not publish balance sheets. Hence we have no information about their fixed assets. The figure was obtained by taking the largest manufacturing firms listed on the stock exchanges and comparing their fixed assets net of depreciation (because the gross figure is not usually available) with the net fixed assets in manufacturing as given by the Commonwealth Statistician.

and the glass industry are each in the hands of a single firm, 70% of the paper industry in the hands of another, 50% of the rubber industry is in the hands of still another and so on for many important industries. For one firm to gain a dominant position in the automobile industry would not be contrary to the general development of the structure of industry in Australia, and would not be expected to raise many eyebrows, especially since the industry is already highly concentrated. In addition, efficiency in meeting market demand seems to be the chief reason for the predominance of GMH—it is hard to trace the failure of competition to reduce its profits to any significant monopolistic practices on the part of GMH itself. Other companies have not produced a car as popular as the Holden (Ford is the only company significantly close to GMH in the market). The tariff on cars not wholly manufactured in Australia is of some importance, but not so much as is generally assumed. To encourage manufacturing in Australia there is a duty on automobile parts of around A£87 on a car equivalent to the Holden when imported from Britain already assembled, and A£38 on a vehicle to be assembled in Australia. Since automobiles other than the Holden are assembled in Australia partly from imported and partly from domestically manufactured parts, the duty naturally raises their cost, depending on the extent to which parts are imported.[1] Import restrictions imposed for balance-of-payments purposes are much more important and at present are very severe.

One simple and obvious step to take would seem to be a reduction in the tariff and of import restrictions. But this might have two unwanted effects. First, it is very probable that it would hurt other local manufacturers of component parts more than it would GMH. There is a large scope for the reduction of the price of the Holden in the face of competition, and there is strong reason to believe that while GMH would stand up well to increased competition, especially after the new expansion program is well under way, the others would not. In view of the Government's attitude towards the motor-car industry up to the present, it seems unlikely that it would be prepared at this point to risk a discouragement of further local manufacture. Second, and even more compelling from the Government's point of view, is the possible effect on the balance of payments. Any increase in imports is considered highly undesirable under present circumstances. Because of a current deterioration in the balance of payments, import restrictions have recently been severely increased. Since it is not at all certain that increased competition from imports would in fact go far to reduce GMH profits but might involve a partial destruction of the rest of the automobile manufacturing industry, a reduction of the tariff, or of restrictions, might have little effect on GMH and merely cause a further deterioration in the balance of payments.

Nevertheless, the tariff is one of the factors in the situation, and a full-scale inquiry into the state of the automobile industry, which has been scheduled by the Tariff Board for some time, is now in process. It is possible

[1] However, several companies are well forward with plans to produce in Australia.

that tariff revision may to some extent increase competition and reduce the monopolistic element in the GMH profit rate. But competition in this sense will not eliminate the fundamental difficulty—the continued profitable expansion of the firm—unless it eliminates the differentials in expected profit rates which are the very basis for international direct investment.[1]

Various other approaches to the GMH problem have been offered. A favorite of some of the financial commentators is the suggestion that GMH should forthwith accept Australian equity capital. Even apart from the fact that this implies a repatriation of capital for which special permission is required from the Government, the proposal is highly impractical if it is expected to be on more than a token scale designed primarily for its psychological effect. To reduce significantly the foreign-exchange payments if profits and dividends near the present scale are continued, the Australian-held proportion of the total equity in the company would have to be substantial. Let us assume that the parent company would have no objection to 49% of the equity being transferred to Australian hands. Given the present net worth of the company, this might involve a diversion of Australian investable funds to GMH of something like A£90 million. The total investment funds raised in Australia on the capital market by Australian companies and semi-government authorities was not over A£200 million in 1954. Clearly it would take many years before a transfer of funds, including the repatriation of the capital, on this scale could be absorbed by the Australian economy without serious complications.

Finally, it is possible for the Government to limit the remittance of dividends either by direct limitation of the amount that can be exported or by very heavy progressive taxation. Some of the problems raised by this are discussed below; it is sufficient at this point to note that in order to attract foreign capital the Government has made it more or less clear that this type of action would not be taken; hence it would inevitably be viewed as a repudiation of previously incurred obligations and would create bad feeling all around. As is suggested below, once a foreign firm is established, it is not, from an economic point of view, desirable to limit its growth or to buy it out at its market value, in whole or in part, although from a political point of view a case can be made for acquiring it.

II

Let us now examine the problem in more general terms. It will be argued that the growth of foreign investment through the reinvestment of retained earnings by firms is subject to different influences from those determining the inflow of foreign investment from other sources. Once a foreign firm is established its continued growth is an increase in foreign investment, but an increase which is more appropriately analysed in the light of a theory of the growth of firms rather than a theory of foreign investment. The issues raised for the receiving economy will then be discussed.

[1] See Section II below for discussion of this point.

The Growth of the Firm

In the absence of markedly unfavorable environmental conditions, there is a strong tendency for a business enterprise possessing extensive and versatile internal managerial resources continually to expand, not only in its existing fields but also into new products and new markets as opportunity offers. The expansion is not usually a continuous straight-line process; rather it fluctuates with external conditions, and may be retarded by internal difficulties. But for the successful firms over the long haul—and there always are such firms—there seems to be no reason to assume that the process cannot continue indefinitely, or at least for any relevant future. The "productive opportunity" which invites expansion is not exclusively an external one. It is largely determined by the internal resources of the firm: the products the firm can successfully produce, the new areas in which it can successfully set up plants, the innovations it can successfully launch, the very ideas of its executives and the opportunities they see, depend as much on the kind of experience, managerial ability and technological know-how already existing within the firm as they do upon external opportunities open to all.[1]

Direct foreign investment—and by this I mean the ownership and operation of business organisations in a foreign country [2]—can, in its origin, be of several types. Here we are interested only in direct investment in manufacturing activity which takes the form of the establishment of branches or subsidiaries in foreign countries. In the realm of manufacturing this kind of investment is probably more effective in expanding productivity and promoting industrial efficiency than any other kind of foreign investment.[3] Its advantages derive largely from the fact that behind the new foreign firm are the resources and experience of the parent concern, including not only managerial and technical personnel but also that indefinable advantage in its internal operations which an efficient going concern usually has over a new one. Consequently the receiving country, in addition to foreign capital, foreign technicians and management, also obtains an unlimited drawing account, as it were, on the intangible resources of the investing company. The establishment of foreign subsidiaries or branches is, for the parent company, not essentially different from the establishment of subsidiaries or branches in its own country. To be sure, greater allowance for risk must be made, and greater profits are expected if the venture succeeds according to plan. But the new expansion is still part of the process of growth of the parent company.

Once established, however, a new subsidiary has a life of its own, and its growth will continue in response to the development of its own internal

[1] For a fuller, though still incomplete, discussion of the theory of the growth of the firm upon which part of the argument in this paper is based see my "Limits to the Growth and Size of Firms," *American Economic Review*, XLV, No. 2 (May 1955), Papers and Proceedings, pp. 531–43.

[2] This begs the question of what constitutes ownership or, more precisely, a controlling interest. For the purposes of this paper we need not worry about the kind of precise definition necessary for statistical analyses.

[3] By the emphasis on manufacturing I want to exclude from consideration the development of public utilities, railroads and similar industries basic to manufacturing through inter-governmental loans or through international financial intermediaries. Obviously such investment may be equally effective in promoting development.

resources and the opportunities presented in its new environment. This means, in the first instance, expansion in the production of the products contemplated when the subsidiary was originally established, an expansion which may well continue for a considerable period if, as is usually the case, the firm is introducing a new product or was established in an industry with the prospect of rapid growth. In time, however, the possibilities of expanding in other fields will appear attractive, either because expansion in the original lines at the same rates as before is no longer profitable, because new market opportunities have appeared, or because the firm has itself developed, or can draw on the parent company for productive services suitable for other types of products (*e.g.*, by-products, innovations related in production or consumption to the original product, a market standing facilitating the sale of other products, etc.). One of the notable characteristics of the growth of large modern corporations is the extent to which they change the range and nature of the product they produce as they grow. They introduce entirely new products, they improve and alter existing products, they enter into a wide range of industries, continually adding to their product lines. In other words, firms are not limited to their original fields; they tend to branch out in many directions. The extent to which this process of diversification can continue depends upon the flexibility of management and upon the resources of the firm—no clear limit is as yet discernible, even in the largest United States corporations. GMH in Australia illustrates the principle: even if the profitability of automobile production declines as competition develops, GMH can in principle, and very likely will in practice, continue to expand by going into other activities where a higher rate of return is still available. As noted above, the firm is already making provision for expanding production into a wide range of fields. In short, so long as there are openings in industry in which the firm expects a rate of return on investment sufficient to justify entering it, there is nothing in principle to limit its continued expansion. And if foreign firms have any advantage in management, technology, capital or other resources, foreign firms may be expected to grow somewhat faster than domestic firms, even in the absence of any exorbitant degree of monopoly power. This conclusion is reinforced by the fact that foreign firms tend to enter the newer, and therefore faster-growing and more profitable, industries.

On the whole, foreign subsidiaries have, for a variety of reasons, a greater degree of independence of the parent than have domestic subsidiaries. Where they are in a distant country the distance itself tends to restrict the mobility of personnel; where the subsidiaries operate in a radically different political, economic and social environment more weight is often given to the judgment of their executives, who are likely to possess an understanding of conditions that is not easily available to the parent company; where foreign subsidiaries are concerned, the area over which a close co-ordination of policy is considered necessary is often smaller than it is with respect to domestic subsidiaries operating in a more closely connected national market. For these and similar reasons, a foreign subsidiary, once it is established, is, with impor-

tant exceptions, more appropriately treated in many ways as a separate firm. The most important of these exceptions relates to finance.

Foreign subsidiaries can obtain additional capital from their parent companies or, like local firms, from the local capital market. If funds for expansion are obtained from local equity sources the firm will represent foreign investment to a progressively smaller degree as it grows, and the problems discussed in this paper will not arise.[1] But a preference for expansion through retained earnings is becoming increasingly characteristic of the modern corporation, and of particular interest from the point of view of foreign investment is the situation, especially favored by American firms, in which the parent company holds all, or nearly all, of the equity and permits the subsidiary to expand with its own earnings.

Internally Financed Foreign Investment

The preference of American firms for nearly complete ownership of their foreign subsidiaries contrasts sharply with British practice.[2] Several reasons for the contrast have been put forward by business-men and economists—on the part of the Americans, a desire for freedom from interference from minority stockholders, a desire to avoid shareholder criticism of a ruthless dividend limitation in the early stages of growth even when profits are high, a desire to avoid precise inter-company book-keeping (such as charging part of the overhead of the parent concern to the subsidiary, charging it for managerial and technical advice, service and " know-how "), a desire for secrecy;[3] and on the part of the British, an appreciation of the political importance of a shared ownership. Whatever the reasons may be, the preference is clear. The result is that virtually the entire growth of most American-owned subsidiaries is properly classed as a growth in foreign investment. And a very large proportion of the total increment in United States investment abroad in recent years has taken the form of re-investment of retained earnings of such subsidiaries.[4]

[1] There are a variety of ways in which foreign concerns can co-operate with local firms and financial interests in establishing and developing manufacturing activity and without creating the kind of problem typified by the GMH case. See, for example, the methods discussed in *Processes and Problems of Industrialization in Under-developed Countries* (New York: United Nations, Department of Economic and Social Affairs, 1955), pp. 85–6.

[2] It has been estimated that on the average American companies hold 85% and British companies 40% of the Ordinary Shares of their subsidiaries in Australia.

[3] Foreign subsidiaries in Australia, for example, do not have to publish balance sheets unless they are " public companies " (some shares being publicly held); GMH issued Preference Shares in order to acquire the Holden company, and for this reason has to publish a balance sheet.

[4] " Between 1946 and 1951, for example, no less than three-quarters of all United States new direct foreign investment in manufacturing industry was the result of the ploughing back of profits earned in foreign branches and subsidiaries." United Nations, *op. cit.*, p. 84. According to a very interesting paper on the contribution of overseas companies to Australian post-war industrial development presented to the 1955 meeting of the Australian and New Zealand Association for the Advancement of Science by D. M. Hocking, which was based upon figures developed by the Australian Department of National Development, direct investment in secondary industry in Australia from the United States increased by A£80·1 million between 1945 and 1953. The United States Department of Commerce (*Survey of Current Business*, December 1954) estimates that the undistributed profits of Australian subsidiaries of United States firms amounted to A£65·2 million in the period from January 1946 to December 1953.

Because of the potentialities for expansion inherent in the modern corporation with its extensive techniques of decentralised management, its emphasis on developing new markets, on innovations and on research, and its power to generate internal funds for expansion, there are several reasons for believing that the flow of direct foreign investment when it is the result of the growth of foreign firms through retained earnings will proceed at a faster rate, in larger amounts and for a longer period than was characteristic of direct investment of the past. Furthermore, a decision by the parent firm to embark on a new foreign venture is taken under substantially different circumstances from those surrounding a decision to permit an already existing (and profitable) venture to expand.

Although it is true that foreign investment is undertaken because a rate of return on capital that is higher than alternative rates obtainable elsewhere is expected (although not necessarily in the short run), it should not be forgotten that a very considerable input of the managerial and technical resources of the investing firm may be required to ascertain what foreign opportunities exist and how they may best be taken advantage of. Indeed, the original investment of many a foreign firm has been little more than an exploratory venture which can be classed essentially as part of the cost of discovering whether or not investment is desirable. The cost of investigation, together with the cost of planning, organising and actually establishing the new firm must, other things being equal, obviously limit the number and extent of such ventures undertaken. When, however, a profitable foreign subsidiary presents a request that it be permitted to retain some or all of its profits for further investment, the case is different. The parent firm is presented with a program for expansion which has already been evaluated by the management of the subsidiary. It has to consider this program, to be sure, and it may modify it, but the exploratory work has already been done, and been done by men who know local conditions and (presumably) are trusted and responsible officials of the firm. In other words, an interested group in the firm itself presents a case and makes a plea. The degree of uncertainty surrounding such investment, and the cost of making it, is surely much lower than that associated with a new venture, and the investment, therefore, much easier to make.

Secondly, the very operations of the subsidiary in the foreign country, its knowledge of the market and of the conditions of production, the experience gained by its officials and the position it may have established for itself with its own customers and in the country generally all tend to create new opportunities for further investment, opportunities that did not exist at the time the firm was established. These, since they are new opportunities for the growth of the foreign firm, are by definition, new opportunities for the growth of foreign investment.

Finally, there is the fact that it is often easier not to go into an activity than it is to abandon it once it has been firmly established. In the modern corporate world, maintaining an established position often requires net new investment to keep up with the innovation of products, production tech-

niques and marketing methods of competitors. Thus new investment may be required indefinitely to enable the foreign subsidiary even to maintain its position in the foreign market. And here enters, in a sense, a non-economic factor. More is involved in a going concern than an investment of funds. An organisation has been created, men and women have vested interests in the concern, a publicly recognised entity exists. It seems highly probable, and the suggestion has been confirmed in various conversations with businessmen, that there will be a strong tendency for the parent company to take its "cut" of the profits and to permit the subsidiary to retain a part long after a comparison of rates of return on capital would attract new investments in the absence of the existing subsidiaries.[1] In other words, even if increasing investment reduces, or even eliminates, the original differential between foreign and domestic rates of return on capital, foreign investment will still increase because foreign-owned firms will continue to grow through their own earnings. There is very little information available to enable us to evaluate the importance of this aspect of the matter. But from what we do know of the general processes of growth of business firms, there seems no good reason for expecting that the growth of the successful foreign firms will cease at any time, and the only important question relating to the growth of foreign investment is whether finance will be obtained from retained earnings or whether the parent company will gradually permit a dilution of the equity with domestically raised capital.

In effect, the profitable operation of foreign companies means, in the first place, that there are likely to be more funds available for foreign investment than there would otherwise have been, and in the second place, that the opportunities for foreign investment are enlarged. More funds are likely to be available because of the general bias in favor of permitting a successful subsidiary to retain some of its earnings for expansion, and because of the reduction in uncertainty and risk associated with foreign investment of this kind in comparison with the launching of entirely new ventures. New opportunities are created in the same way in which any growing and aggressive firm creates its own opportunities; it just happens that opportunities for expansion created by foreign firms are at the same time new opportunities for foreign investment.

Such are the reasons for expecting that the flow of foreign investment will increase at a more rapid rate and continue longer when it depends on the expansion of existing firms than it would if it depended on fresh imports of capital for new firms. And I suggest that the increasing importance of direct foreign investment in manufacturing in recent years is partly explained by these factors—some investment that would not otherwise have been made is being made for the reasons outlined above. It is direct investment, but of a much less speculative and risky kind than is usually assumed.

[1] This is particularly true if capital repatriation is not permitted and the foreign firm has no alternative but to continue to invest to protect its existing investment.

The Balance-of-payments Problem

Such investment, though ardently desired by the less-industrialised countries, is not accepted without misgivings. The misgivings relate to two potential difficulties: the political implication of foreign control and the economic problem of paying for the investment. Both are greatest in the case of direct investment; here we are concerned only with the economic problem. There can be little doubt that in order to provide the means of paying for foreign investment, an economy may, in the absence of expanding exports, be faced with the difficult task of inducing an unpalatable reduction in domestic consumption and investment.

This task may be especially difficult when incomes are expanding rapidly in response to a high rate of investment pursuant to government industrial-development and full-employment policies. Under such circumstances, with consumption and investment at high levels, import demand is likely to be very high, not only for consumers' goods, but especially for capital goods. The problem of maintaining economic stability—sustained full employment without inflation—becomes crucial, and is particularly difficult in countries whose export proceeds are subject to wide and unpredictable fluctuations from season to season. The goal of governments is to keep inflationary pressures under some sort of control without precipitating deflation, or if deflation threatens, to counteract the recession quickly and thus prevent depression. In pursuance of this goal there is often little hesitation in applying direct exchange and import restrictions or in using Central Bank credit to maintain financial liquidity in order to ensure that unfavorable movements of the foreign balance do not interfere with domestic policy. Yet the foreign balance is likely to be a continual source of trouble because of an excessive demand for imports consequent upon the difficulty of controlling "excess demand" within the economy without creating unacceptable unemployment. At the same time depreciation as a remedy is looked on with great suspicion, to be used only rarely and *in extremis*.

Such policies have several effects on the problem under discussion. High levels of activity mean high business profits, which not only attract foreign firms but also furnish an easy source of funds for the expansion of already established firms. In a raw-material-exporting economy, where industrial development does not contribute substantially to exports, large amounts of foreign lending may well be necessary to sustain the development program unless demand for the country's raw-material exports is also expanding rapidly. The high levels of activity attract the foreign investment required in the form of direct private investment, and particularly, after foreign firms have become well established, in the form of the growth of foreign firms through retained earnings. We have already shown that direct private investment will tend to grow rapidly and without practical limits as foreign firms grow. So long as these firms retain the greater part of their earnings for re-investment the effect on the balance of payments of servicing the investment is masked, for the re-investment of profits is equivalent to an import of

foreign funds. In not exercising their right to export their profits, the firms leave foreign exchange available to the country that would otherwise have gone into dividend remittances.[1] The effect is similar to the familiar process by which old loans are serviced partly out of the proceeds of new ones. No problem is apparent until the new lending stops. When profits are not paid out it is as if new loans were being made, but when this new "lending" slows down and dividends are paid on the existing investment the country may find that some difficult readjustments in the economy are required. It has been traditionally held that loans with fixed interest payments are likely to be more of a burden on the economy than equity investment, because in the former case the payments have to be made at the same rate in periods of depressed economic activity, while in the latter dividend payments fall when profits are low. This appraisal of the two forms of investment must be revised if, as seems likely, the more severe depressions can be prevented by appropriate internal government policy.

When the readjustments in the economy required to service foreign investment are difficult to make they create what is called a "balance-of-payments problem." And they will be the more difficult to make the greater the pressure of domestic demand on imports and the larger the foreign payments required. Rapidly developing economies attempting to maintain consistently high levels of employment will have continually to struggle to control excess domestic demand. Under the circumstances assumed in this paper dividend remittances from direct private investment will tend to involve larger transfers of foreign funds than would have been the case if only loans had been received. Consequently, a real "balance-of-payments problem" in this sense may arise. But it is, in essence, a "technical" problem, a problem of how best to reduce domestic consumption and investment—whether to use import restrictions, tariffs, exchange rates, taxation, monetary policy or some combination of these, and how to mitigate, if desired, the effects on the distribution of income and on the direction of domestic investment. However, in so far as foreign investment goes into industries producing for the domestic market, total dividend payments are likely to move slowly upward without much fluctuation. If export proceeds fluctuate widely from season to season the dividend payments may cause severe strains on the country's reserves from time to time. In so far as foreign investment takes place in export industries, the profits, and hence the dividends, of foreign firms are more likely to fluctuate with export proceeds and less likely to cause temporary strains. Economic authorities have an understandable reluctance to force far-reaching economic adjustment because of temporary difficulties. In the absence of sufficient flexibility in exchange rates the only alternative lies in the creation of adequate inter-

[1] We are not, of course, taking into account here the effect on the demand for imports (or supply of exports) of the investment which is itself the alternative to the building up of cash balances for the purpose of paying dividends. This is part of the whole question of how industrialisation in a primarily raw-material-exporting country affects the demand for imported goods—a question we cannot explore in this paper.

national reserves to maintain service on investment in periods when export proceeds are low.

Australia is an excellent illustration. Exports are only a little influenced by its industrial development.[1] Import demand is continually straining the country's foreign resources. Foreign investment, in particular direct dollar investment through the growth of American firms, is increasing rapidly. The balance-of-payments problem that this investment may create is masked so long as substantial proportions of the profits of foreign firms are retained. But as the total profits of foreign firms grow and the firms become more solidly established, the tendency to pay out a goodly portion of their profits to the parent companies will increase, particularly if foreign firms become nervous about the balance-of-payments position. It is highly probable that in time this portion paid out of a growing total will become large enough to make an appreciable contribution to the already existing difficulties of keeping the demand for foreign exchange within bounds, for the profit of the foreign firms, and the firms themselves, will continue to grow so long as the efforts of the Government to maintain domestic incomes at a full-employment level are successful. The adjustments required, together with the foreign payments made, are indeed a " cost " to the economy, and the basic question is whether the foreign investment is worth the cost. Is there anything in the nature of the type of foreign investment considered here—the growth of foreign firms—that makes the high cost of this investment " too high "?

Cost vs. *Benefits*

In principle, the growth of foreign indebtedness, like the growth of domestic indebtedness, need not be of particular concern in a growing economy, providing that the net income out of which the indebtedness can be serviced also grows correspondingly. If the increments of investment involved in the growth of foreign firms are of such high productivity that domestic real income is raised to an extent equal to, or greater than, the return on the investment to the owners of the capital it will pay the economy to accept them. There may be " technical " problems associated with the remittance of dividends, but in principle if the increase in the economy's productivity is not less than the cost, it will pay the economy to make the required adjustments, provided that the same increase in productivity could not have been obtained at a cheaper price.

There are two types of benefits realised from foreign investment: additional supplies of capital, on the one hand, and, on the other, new techniques of production and management, entrepreneurial skill, new products, new ideas. We have suggested that loan capital is in general cheaper than equity capital, but that probably less foreign investment would take place if loans alone were relied on. But it is primarily in the second category of benefits that the special advantages of direct investment lie. The benefits

[1] However, we should not overlook the fact that industrialisation may have *reduced* exports by diverting exportable products to domestic consumption and by attracting factors of production away from the export industries.

of direct foreign investment, when it takes the form of the establishment of new foreign firms, the introduction of new technology and the provision of experienced managerial and technical services can hardly be exaggerated.[1] In addition, the development of subsidiary industries and the improved productivity of other resources which the entry of a progressive foreign firm into a major industry may stimulate is of great importance in increasing the total productivity of the economy. The importance of the opportunities afforded for training not only the domestic labor supply but also domestic managerial and technical personnel is attested to by the lengths to which many countries go in insisting that foreign firms make special efforts in these directions. If the benefits of direct investment can be obtained in some cheaper way it will, of course, pay to do so. The intrinsic difficulties of controlling direct private investment once it gets established, the problem of paying for it, together with the political fear of foreign " exploitation " and domination, have led many countries to explore ways of hiring foreign management and technical personnel and purchasing access to foreign technology.[2] Such efforts have met with considerable success in some of the Latin American countries, but from an economic point of view it seems doubtful that they would obtain for the country the full set of advantages which are brought in by new foreign firms, although this will vary appreciably between industries. Nevertheless, a great deal can be gained in these ways which benefits the economy. Furthermore, it must be conceded that from a political point of view there is much to be said for this approach.

Even if a great many of the advantages of foreign investment can be obtained by these cheaper methods, it is still true that so long as still more capital and still further " intangible " benefits can be acquired by permitting the establishment of foreign firms whose contribution to the domestic product is greater than the cost of the investment, it will pay the economy to accept them. And so long as this condition holds true for further increments of expansion of foreign firms, it will pay the economy to permit the indefinite expansion of these firms.[3] If a point is reached where it does not hold true, *i.e.*, where the profits of the foreign firms contain a strong element of private monopoly gain, the situation is changed and the increase in foreign liabilities may be, to the extent of this gain, a net loss to the economy. This brings us up against the moot question whether the monopoly elements almost inevitably associated with the position of the very large firms are almost necessary conditions for further research, innovation and progress, as has been powerfully argued by many, Schumpeter in particular. In some cases

[1] For a survey of the enormous contributions made to the Australian economy by foreign firms see D. M. Hocking, " New Products, New Skills Follow Overseas Capital," *The Australian Financial Review*, September 29, 1955, p. 2. John H. Dunning has discussed a significant aspect of the importance of the contribution of American firms to the British economy in an article " United States Manufacturing Subsidiaries and Britain's Trade Balance," *District Bank Review*, September 1955, pp. 20–30.

[2] See United Nations, *op. cit.*, pp. 85–7.

[3] This is, of course, apart from the political question of whether large and powerful firms—foreign or domestic—should be countenanced.

this may be true; in others it plainly is not true. In any event, this is the element in the growth of foreign firms that will cause the increments of foreign investment it represents to take place at " too high " a cost to the economy, and it is this element, consequently, that receiving countries should pay especial attention to. It is obvious that this particular type of foreign investment is more likely than most others to contain an appreciable amount of unproductive monopoly profit.

Now all of this bears on the proposition, so often put forward, that there is some gain to the economy if arrangements are made after a point to buy out the foreign investor. It is probably true that the contributions of direct foreign investment are of greatest importance in the early stages of the growth of the foreign firms and of industrial development. It seems very likely that as the firm grows the point is reached where the specifically foreign contribution to the operation of the firm becomes less important in relation to the contribution of the locally recruited staff who have grown up with and have been trained in the firm. But if the firm is still paying its way—if the contribution to the productivity of the economy is greater than the return to the owners—it will not be to the domestic economy's advantage to divert scarce domestic capital to replace the foreign capital so long as there are opportunities for the profitable use of domestic capital. On the other hand, if the firm is making monopoly profits it would even less pay the economy to buy the firm at its market value, which would inevitably include the capitalisation of prospective monopoly profits. If there is no other way of eliminating the monopoly profit, then the purchase of the firm at a price which did not reflect prospective monopoly profits may be the only economic solution to the problem—this is usually referred to as " expropriation."

Thus it is clear that if it is economic to accept direct private foreign investment at all and to permit the establishment of foreign firms, that is to say, if the benefits of foreign investment cannot be obtained in cheaper ways (perhaps over a longer period of time), then it is desirable to permit the continued growth of foreign firms so long as they pay their way.[1] Furthermore, once they are established, under no circumstances does it pay to buy them out at their market value if domestic capital can be more profitably used elsewhere.

The fact still remains, however, that if extensive amounts of direct foreign investment are obtained, the balance-of-payments problem of the type discussed earlier may require adjustments which create awkward difficulties for many established government policies. If, therefore, there is not a reasonably large gain to be had from direct foreign investment, the country may well consider that the investment is not worth the cost of the adjustments required to pay for it. Furthermore, the political repercussions of policies designed to

[1] It has been implicitly assumed in this entire argument, of course, that industrialisation itself is, in the long run, a profitable use of the country's resources, or rather that the rate of industrial development implied in the investment program is not excessive. If this is not true and if real income would be increased if more resources were devoted to the raw-material-exporting industries and less to domestic industry, then further foreign investment, just as further domestic investment, in industry will be unprofitable to the economy as a whole.

restrict domestic expenditure when it is realised that the restrictions are partly for the sake of paying foreign " capitalists," may make such adjustments virtually impossible. By calling the balance-of-payments problem a " technical " one I do not mean to minimise its difficulties. Policies designed to force the rate of industrialisation, coupled with the potentialities for almost indefinite growth inherent in the modern corporation, the modern trend for increasing reliance on internal financing of expansion and the preference, particularly of United States firms, for nearly complete ownership of foreign subsidiaries, raises the possibility that much larger amounts of direct foreign investment may take place in a much shorter period of time when political conditions are favorable than was generally the case in the past. When and if the foreign payments become significant, the countries accepting the investment must also be willing to accept the adjustments in domestic consumption and investment required to service it. One suspects that for some countries there may be a basic incompatibility between the economic objectives of fostering very rapid industrial development and at the same time promoting domestic full employment at all times regardless of the state of the foreign balance, and the acceptance of an unlimited, unknown and uncontrollable foreign liability.

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THE DISAGGREGATION OF INVESTMENT IN THE STUDY OF ECONOMIC GROWTH

THE purpose of this article is to explore means of clarifying discussion of investment, particularly in relation to economic growth. After a brief survey of some possibilities in the field of investment analysis, two methods of disaggregating total investment are suggested. These two methods are: (1) division of total investment into supply investment and demand investment; (2) division of total investment into initiatory investment and complementary investment. The relationship between this latter classification and Mr. Harrod's concept of long-range investment is briefly discussed. Inventory investment is throughout excluded from consideration. No attempt is made to " explain " either investment or economic growth, and there is no suggestion that there exists one correct method of disaggregation.

I

Investment can be conceived as a process not only of creating capital but also of imparting specificity to resources. This is another way of saying that capital, once created, is not homogenous; although it may be true that some capital instruments can be switched from one use to another, possessing, so to speak, a certain elasticity of transference between uses.

The non-homogeneity of created capital is the basis of two well-known methods of disaggregating total investment. These are:

(1) according to sphere of use (*e.g.*, industry or sector);
(2) according to the estimated income-earning life of the asset.

To these might be added:

(3) disaggregation according to physical composition (*e.g.*, proportion of imported goods contained in the asset).

Each of these methods has its appropriate function. But for the study of economic growth, it is especially useful to differentiate according to the nature of the decisions which give rise to capital creation rather than to the nature of the capital created, because this helps to clarify the nature of the circumstances in which decisions to invest are, or are likely to be, or can be taken. The remainder of this article is concerned solely with this kind of analysis.

II

In one sense, all decisions to invest are homogeneous, because all assets are created in the expectation of profit. But disaggregation is possible by reference not to expectations as such, but to the nature of the connection between the current market situation and the decision to invest. It does no violence to language to describe this as expectational analysis, because,

although it does not deal with expectations in the customary way, expectations about the future are involved in all investment decisions for the simple reason that all investment decisions relate future output to some hypothetical projection of the current market situation.

Many varieties of expectation leading to investment have been suggested.[1] At present, the popular distinction is that between induced and autonomous investment. A distinction of this sort appeared first in trade-cycle analysis as a result of the revival by several authors of interest in the so-called acceleration principle.[2] To begin with, what is now called induced investment was called derived demand, while as a rule very little was said about the remainder of investment activity. This unbalanced treatment of the subject was not challenged until, in his review of Mr. Harrod's *The Trade Cycle* published in 1937, Sir Dennis Robertson wrote as follows:

> "I find myself in agreement with Mr. Harrod that the principle of acceleration deserves pride of place in any analysis of the trade cycle. But the next most important thing to be said is perhaps that some of the principal forms of investment in the modern world—the instruments of power production, of transport, of office activity—are, after all, very loosely geared to the visible demand for particular types of consumption goods and depend rather on fairly vague estimates of the future progress of whole areas and populations."[3]

Again there was a lapse of years, until finally Mr. Harrod, in his pioneering "Essay in Dynamic Theory," reached out to include non-induced as well as induced investment in a fairly systematic if regrettably brief analysis. It is significant that this step was taken in a treatment which emphasised the connections between the trade cycle and economic growth. Mr. Harrod distinguished between induced investment and long-range investment, and he divided the latter into two parts, one varying with the current level of income, the other "quite independent both of the current level of income and its current rate of growth," involving outlays "related to a prospective long-period increase of activity" or "induced by new inventions."[4] Later, Professor Hicks devised the slightly different distinction, which has become more prominent in discussion, between induced and autonomous investment.

By emphasising that the more remarkable changes in investment activity take place alongside much investment activity which is of a fairly stable nature, Hicks performed a valuable service to trade-cycle analysis. In the

[1] The earliest and still one of the best analyses of the problem is to be found in D. H. Robertson, *A Study of Industrial Fluctuation*, especially Chapters III and IV. See also R. F. Harrod, "An Essay in Dynamic Theory," ECONOMIC JOURNAL, March 1939; J. R. Hicks, *A Contribution to the Theory of the Trade Cycle*; T. Wilson, "Cyclical and Autonomous Inducements to Invest," *Oxford Economic Papers*, New Series, Vol. V, No. 1; and W. W. Rostow, "Some Notes on Mr. Hicks and History," *American Economic Review*, Vol. XLI.

[2] The article by J. M. Clark, "Business Acceleration and the Law of Demand," *The Journal of Political Economy*, March 1917, was itself something of a revival. For earlier statements see T. N. Carver, "A Suggestion for a Theory of Industrial Depressions," *The Quarterly Journal of Economics*, May 1903; A. Aftalion, "La Réalité des Surproductions Générales," *Revue d'économie politique*, 1909.

[3] Robertson, *Essays in Monetary Theory*, p. 179.

[4] *Loc. cit.*, pp. 26–7.

study of economic growth, however, the more stable element deserves greater attention than it has usually received; and difficulties appear as soon as autonomous investment is examined at all closely. Leaving aside the functional objection, so to speak, that within Hicks' model autonomous investment results in no addition to capacity, there is the definitional difficulty that the distinction between autonomous and induced investment " is not, in practice, a sharp one." [1] A boundary of vagueness must always surround any category of investment, and there must always be doubtful cases; this is especially true where we are classifying by motive, because motives, in the economic no less than in the moral world, are mixed. But there are reasons for regarding the category of autonomous investment as peculiarly unsatisfactory. The meaning given to " autonomous " in *The Trade Cycle* is " not induced by changes in output." This means that autonomous investment is classified according to a negative characteristic; and it is therefore not, like induced investment, a category itself defined by motive. The definition of autonomous investment is held to cover all cases of: " Public investment, investment which occurs in direct response to inventions, and much of the ' long-range ' investment . . . which is only expected to pay for itself over the long period." [2] It is further suggested [3] that bulges and dips in autonomous investment might be amenable to control *via* " a large movement in the rate of interest." At this point, doubts even of the reasonableness of the original idea begin to arise. Is it true, for example, that past changes in the level of output have an effect on the willingness of entrepreneurs to pioneer innovations " so small as to be insignificant "? [4] Waiving this difficulty, if autonomous investment is responsive to substantial movements in the rate of interest, is it not the same as investment with a long earning life? But if it is the same, then the complementary category to this should be not induced investment but short-range investment, *i.e.*, investment with a short earning life. But this means that we are back—or at least half back, for Hicks acknowledges only " much " long-lived investment to be involved—in the world of classification according to the expected income-earning life of the asset.

In other words, the distinction between induced and autonomous investment seems to be not only as vague as all such distinctions must be, but unnecessarily and disturbingly vague, and autonomous investment seems something of a rag-bag category. Hicks' classification has been severely handled for other reasons, and a fresh start is required. This can be made by means of a form of supply-and-demand analysis.

Demand Investment. By demand investment is meant investment undertaken in response to the known trend of demand for consumers' or for producers' goods. This category provides two subdivisions:

(*a*) Normal replacement investment.

(*b*) Investment which makes an addition to capacity, undertaken either because of a rise in the demand price of the consumption goods

[1] Hicks, *op. cit.*, p. 59.
[2] *Ibid.*, p. 59.
[3] *Ibid.*, p. 105.
[4] *Ibid.*, p. 59.

concerned, or because of a fall in the ratio of capacity to average output, or because of both these influences together; or because of the expectation of such changes.[1]

Supply Investment. By supply investment is meant investment undertaken in response to changes in the conditions of supply. This category provides three subdivisions:

(*a*) Investment designed to place a new commodity on the market.
(*b*) Investment designed to place an improved commodity on the market.
(*c*) Investment designed to provide a cheapened and increased supply of an existing commodity.

It is to be noted that each of these kinds of investment may be carried out either by an entrepreneur who seeks to enhance his profits by stealing a march on his rivals or by one who is merely attempting to keep his head above water.

These five subdivisions of investment according to the nature of the connection between the current market situation and the decision to invest leave no investment unaccounted for. Many acts of investment, of course, will fit into more than one of these subdivisions. Nevertheless, this classification is systematic in a way in which the well-known two-division classifications of investment—the induced/autonomous distinction and the long-range/short-range distinction—are not, and it is also neutral in the sense that its validity does not depend upon prior acceptance of a theory about the nature of cyclical movements nor upon some grasp (even if only intuitive) of the general dynamic characteristics of the economy to which it relates (as is the case with long-range investment). The composition of investment can be studied within this framework with respect both to long- and to short-period movements, and the study of changes in the relative importance of the suggested subdivisions could prove helpful in explaining changes in the overall level of investment.

At the same time, it must be recognised that the neutral character of this classification is a drawback as well as an asset. For it is only within an understood economic framework that any classification of investment decisions can be useful, and it may well be that the most suggestive classifications carry with them some assumptions or implications about the nature of the economic world to which they relate. The difficulty is to make entrepreneurial decisions understandable without becoming involved in a far-reaching discussion of social and institutional circumstances. There exists one line of disaggregative analysis, however, which, although leaving a great deal unaccounted for, does both imply and to a small extent explain the operation of

[1] From the standpoint here adopted, it does not matter whether the addition made to capacity prove profitable or unprofitable. Viewed *ex-post*, some of the investment may be seen to have been undertaken because of a miscalculation of the relation between existing capacity and future demand.

certain not unlikely economic forces, while at the same time lending itself to at least a limited theoretical development. This line of analysis is set out in the next section.

III

It is sometimes argued that the accumulation of capital must cause a fall in the rate of return on capital, and hence on the rate of growth of the capital stock. Something like this was argued by Marshall, who was careful, however, to restrict his argument to the secular long-period; and this may be very long indeed. For the important fact is that some forms of capital creation stimulate rather than depress further capital creation. If it were true that all innovations are capital saving,[1] and if an appropriate assumption were then made about the elasticities of demand, the argument that accumulation exercises a depressive effect on the rate of growth of capital would hold good without qualification. But not all innovations are capital saving. Some innovations are both labour and capital saving, and it would seem that as a rule they have been labour saving. This does not of itself determine the effect on the aggregate demand for factors, and it ignores the fact that many innovations introduce completely (or as near completely as can be) new products. But it suggests that realistic assumptions about the nature of innovations and about the relevant elasticities of demand would greatly weaken the argument for a decline in the rate of return on capital. Above all, attention is thus focused on the vital role of new product innovation. Investment for this purpose may well give rise to a chain of further investments whereby the initial investment is sustained, elaborated and supplemented. A classic case is the introduction of the motor car. Investment in plant to build cars gave rise to consequential investment in rubber plantations, steel presses, oil refineries, road-making equipment, petrol stations and so on. We can thus form another distinction: that between what can be called initiatory and complementary investment.[2]

This distinction does not come within the family of those already discussed, because it relates in no way to the nature of the decision to undertake investment but solely to how the investment, once it is undertaken, is connected, in terms of supply and demand, with the rest of the economy. It is not, moreover, a clear-cut distinction. Investment in A is the cause of investment in B, but investment in B, in its turn, is the cause of investment in C and so on. Investment in B is therefore both initiatory and complementary. Nevertheless, the flow of activity can more reasonably be interrupted at some points than at others; not all forms of investment require to an equal extent the co-operation of investment in other trades. A more serious difficulty is that the sequence may be upset, and investment in C be

[1] A capital-saving innovation is here taken to mean one which reduces capital input per unit of output; a labour-saving innovation one which reduces labour input per unit of output.

[2] This distinction is not new to economic analysis. It can be found in the work of both Wicksell and Robertson.

undertaken, justifiably, *in anticipation* of investment in the two logically preceding categories. The logical and the temporal sequence may not be the same. Investment in power supply or in the provision of raw materials, for example, may be not a response to demand, but an anticipation of demand, an anticipation which helps to create the anticipated demand. Certainly it is true that some forms of investment are peculiarly initiatory in their operation. They set the economic scene for further investment. Much of this initiatory investment is likely to be cost-reducing in character—transport improvement is the obvious case—rendering it, in Marshall's words, " worth while to do a great many things which it was not worth while to do before." [1]

Is this initiatory investment the same kind of activity as Robertson's investment related to " vague estimates of the future progress of whole areas," [2] and is it the same as that investment which, in Harrod's analysis, is motivated by faith in the long-period growing power of the economy? Not necessarily. The two forms—let us call them initiatory investment and long-period-growth investment—are distinct, especially in motivation. If a piece of initiatory investment opens up fresh investment opportunities in other spheres, and does not merely encourage (or compel) investment in industries selling their products to the initiating industry, then it resembles long-period-growth investment; the more extensive the opportunities opened up, the greater the resemblance. But for initiatory investment to be undertaken, the entrepreneur requires only to be convinced that the product will sell. He need not be aware of the initiatory character of his investment, and its power to give rise to complementary investment and hence, perhaps, to economic growth is of no immediate importance to him. Long-period-growth investment, on the other hand, is undertaken chiefly on the strength of the entrepreneur's assessment of future developments external to his own business. It is rarely, if ever, undertaken on a small scale, and the financial return to which it looks is usually of a temporally remote character. An example can make the distinction clear. An outstanding instance of long-period-growth investment is railroad construction in the United States in the nineteenth century. This was usually a large-scale undertaking, carried out with consciousness of the need for a more developed economy than already existed if the lines were to pay. Investment of this sort generally included extensive efforts to bring about the required economic development. The obvious example of initiatory investment is the automobile. Here, Ford and his contemporaries could begin in a small way, and they depended for large-scale success (which they did not *have* to envisage) on the existence of a latent demand for cheap automobiles, *not* on extensive future growth of the economy as a whole. In both cases entrepreneurs did a great deal to create their own demand, although in the first case this is true chiefly in a " physical " and in the second case chiefly in a " psychological " sense. But the significant point is that initiatory investment may, but need not, result in generalised economic expansion; long-period-growth investment, on the

[1] Evidence before the Gold and Silver Commission, Q.9831.
[2] Robertson, *loc. cit.*

other hand, must have an initiatory character if it is to prove profitable to those undertaking it.

IV

It has already been emphasised that it is only within an understood economic framework that any classification of investment decisions can be useful. This is markedly true with respect to initiatory investment and to long-period-growth investment; for while we may believe that there are acts of investment which fit into these categories and into no others, we cannot understand these acts of investment unless we also understand a good deal of the economic setting, including the mentalities of entrepreneurs, in which they are possible. Unfortunately, little that is significant can be said on general grounds about this setting, although notable attempts have been made to do so, especially in terms of population growth [1] and crop variations.[2] Discussion of these matters leads away from theoretical analysis to the whole problem of the socio-economic milieu in which investment decisions are taken. This is a topic of the highest importance. It has recently been touched upon by several writers,[3] and no one not a slave to *a priori* argument can doubt that the volume of investment is likely to be significantly influenced by other factors besides those susceptible of economic measurement and straightforward definition. It may well be true, for example, that the evidently rapid accumulation of capital in several countries in the 1850s and 1860s and early 1870s was the result of exceptional entrepreneurial optimism, enterprise and boldness, possibly associated with the dominant Liberal ideas of the period, one characteristic of which was faith in a kind of automatic and accelerating progress.[4] This feeling may have been decisive in some instances. But, of course, it remains true that entrepreneurs set their targets high when notable successes have been achieved in the recent past—successes which may well be the consequence of a fortunate conjuncture of circumstances strictly economic.

The nature of these successes and the way in which they may be translated into further business enterprise is a problem which requires discussion in concrete and institutional and not merely in abstract terms. It is for this reason that long-period-growth investment cannot be discussed briefly, or be made to fit conveniently into a theoretical scheme. Despite Mr. Harrod's efforts, it has remained outside the theoretical pale. The idea of initiatory investment, perhaps for similar reasons, has never attracted very much attention. Nevertheless, the study of acts of investment possessing a strong

[1] J. M. Keynes, "Some Economic Consequences of a Declining Population," *The Eugenics Review*, Vol. 39, No. 1.

[2] D. H. Robertson, *op. cit.*, Chapters V, VI and VII. It must be added that Sir Dennis Robertson's discussion is to a large degree factual as well as theoretical.

[3] For example, W. Fellner, *Monetary Policies and Full Employment*, Chapter III, and E. H. Phelps Brown and P. E. Hart, "The Share of Wages in National Income," THE ECONOMIC JOURNAL, June 1952.

[4] For a discussion of the origins, development and ultimate pervasiveness of this idea, see Morris Ginsberg, *The Idea of Progress*, *passim*.

initiatory character may prove to be the key to an understanding of the processes of economic growth.

V

It is not the purpose of this article to press the claims of any one method of disaggregating total investment. Two internally consistent methods have been suggested, one tidy, the other not so tidy. The Robertson–Harrod notion of long-period-growth investment, which has been in danger of being lost sight of in discussion of the induced-autonomous distinction, has also been reviewed. The essential point is that total investment should not be divided into pairs of categories which are inconsistent with one another; into induced investment, for example, which is a vaguely defined market-relationship category, and investment having a long earning life, which is a temporal category. Internal consistency is essential for any classificatory system, and in its absence there is always the risk that classification will increase and not reduce confusion. But completeness and absence of overlapping are other matters, and perhaps it is true that along the most suggestive lines, hard-and-fast distinctions are not to be found.

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GROWTH VERSUS CHOICE [1]

1. Political Introduction

Economic growth is beginning to reoccupy a central position in economics —in theory though not yet in practice—that it has not had since Adam Smith. This re-instatement is very right, since growth is obviously the "best" thing that can happen in economics—better than Free Trade or the attainment of the optimum allocation of resources between competing ends or even full employment. This can be very simply shown: the prime end of economic man is material plenty, he wants to have as much of everything as possible. But in order that this state of affairs should be achieved the economy must grow, *i.e.*, production per head must be increased. Growth is then, by definition, the *sine qua non* for the attainment of the supreme end, and therefore itself supreme. It is, and should be, a cuckoo in the nest of economic topics. This article will survey its relation to one other topic only: that of choice or scarcity economics.

We must inquire first as to the optimum rate of growth. At the present time, in the cold war, the purposes of propaganda, foreign policy and military strategy require that the rate of economic growth in NATO countries should not fall below that in the Communist countries: say 5% per annum in the real net national income. Actually Soviet growth is at 6% per annum,[2] but doubtless Chinese is slower than that, and it would suffice to double the 2½% characteristic of a healthy average non-Communist economy. Are such hardships really necessary, it may be asked? Is not our present economic superiority enough? Out of our superfluity we are to-day in fact spending more than the Communists on re-armament, and investing much more than they in the neutralist backward areas. But although we can beat the Communists at that to-day, they are growing twice as fast as we and will be able to beat us to-morrow. The cold war will last a very long time. Only by outgrowing the enemy can we keep on winning it. Nor does it suffice that backward areas only should achieve such rates of growth. For so long as they remain free they can only grow by importing capital, and the

[1] Parts of this article were read as a paper to the British Association in September 1954. I am indebted for criticisms and corrections to Miss P. Ady and Messrs. N. H. Leyland and G. B. Richardson.

[2] The pre-war rate (1928–37). Cf. Grossman in *Soviet Economic Growth* (ed. A. Bergson), pp. 5–12. In 1948–50 the rate of growth was much greater: Jasny, *Social Research*, Spring 1954, pp. 37–8. The current United States rate (1948/9 to 1952/53) is a mere 3% per annum. The British rate is about 2%. All these figures are, of course, lower if taken per head: by 1% in Britain, 1·5% in the U.S.S.R. and the United States. Such a comparison, relating to economies in entirely different states of maturity, is not, of course, to be taken as ranging them in any order of merit. For that purpose it would be necessary so far as possible to compare the three economic systems at the same stage of maturity. This I have done very briefly in *Foreign Affairs* (U.S.A.), July 1953. In fact, the same order of merit emerges. In its youth the Soviet economy has grown faster than any other young economy recorded; must we not suppose, then, the same of its middle age?

capital required is so enormous that the advanced countries cannot provide it without themselves growing, especially as they must be able *easily* to provide it, in the face of Communist competition to do so. Moreover, to argue only in terms of backward-area growth is to forget the need for superiority in armaments.

2. Indefinite Growth

So much for politics. On pure welfare grounds, however, the question is much more complicated, and we shall not discuss it here, except to stress that the *maximisation* of growth would be very unpleasant indeed for the generation then alive. The ideal rate is less than that,[1] though there is little reason on the demand side to suppose that growth should begin to fall off in any foreseeable future. That is to say, we need not here consider the possibility of an " exhaustion of consumption opportunities," of a near approach to what the Communists call full Communism. This is when productivity is so great that all consumer needs can be satisfied, even if not clothed in effective demand. Leisure increases to almost intolerable proportions, money falls out of use, and we all go and help ourselves in the shops. Choice and scarcity cease to be a problem, and economics to be a worthwhile study. Such a state of affairs, if possible at all, is obviously very far off indeed. We deal here with the intervening period.

In dismissing this interesting problem as beyond our purview, and in insisting that mature capitalist economies can and must grow as fast as immature Communist ones, I imply that on the supply side economic growth curves are not S-shaped but exponential or at any rate linear. Population growth curves may—and do—have almost any shape. Growth should, however, be defined for most purposes as growth in productivity. This in turn depends, so long as there is unemployment of any sort, on capital widening (which increases production per head, of course, but not per worker); and on technical progress (the lowering of the real cost of output), whether or not there is unemployment. Now so long as mere capital widening can take up unemployed or under-employed workers—for instance the flow of Soviet peasants into an ill-organised and inefficient industry during the first Five Year Plan—or so long as there remains great technical leeway to make up, growth can be very rapid indeed. These initial advantages of immaturity exhausted, the rate falls, as it now depends solely on new technical progress. But the fall occurs once for all, and there is no reason at all why the new moderate rate of growth should further taper off. This is not only evident from the actual history of growth in mature countries (neglecting periods of war and slump), but also from the nature of technical progress. For in so far as " inventions " or " innovations " can be made into statistically comparable units, research shows that their growth curve is exponential.[2] Whether this will always be so, whether the sum of eco-

[1] Cf. F. P. Ramsey, Economic Journal, 1928.

[2] Ogburn and Nimkoff, *Handbook of Sociology*, p. 525. Compare Ffrangcon Roberts, *The Cost of Health*, pp. 55–6.

nomically applicable scientific knowledge hitherto undiscovered is finite, is another question. Enough that there is no sign whatsoever of this.[1] *A priori*, it is difficult to see why an exponential curve in the acquisition of cost-reducing or product-innovating knowledge should lead to an S-shaped curve in the rise of productivity. Yet in a mature economy productivity depends in the long run almost solely on knowledge.

3. Growth and Investment

Another proposition must also be laid down at the start: *the prime cause of growth of output per head is investment.* This is not obvious and may not be, as it so often is, simply assumed. Clearly of course capital widening—the mere accumulation [2] of durable assets similar to those already in existence—is by definition an increase in the quantity of resources available for production; it is like the discovery of new land. Its usefulness is severely limited, as we have seen, by the quantity of the labour force—not, of course, by that of the total consuming population. There is no use—quite the reverse, indeed—in capital widening if there are no un- or under-employed to man the new machines. So when the labour force is fully used, growth of output per head is very largely due to the discovery *and application* of new techniques, new minerals, new plants, etc.

Now some writers [3] set technical progress over against, not only capital widening in particular, but investment in general, as a superior cause of growth. Superior maybe, but not separate. For investment is the ugly but indispensable handmaiden of nearly all technical progress. First both the discovery and the application of new techniques and materials require a great deal of money, *i.e.*, of savings. In other words, though quite different from the multiplication, improvement or renewal of capital assets, research is investment.[4] And as research goes on we find that all the easiest discoveries have already been made. Though the remaining field of knowledge is surely infinite, and for all we know that of economically useful knowledge too (see above), new discoveries become more costly. More and more equipment, and ever less intelligent assistants with ever longer and more specialised training, are drawn in.

[1] I am also unable to say *a priori* whether finiteness is more probable than infinity here. It is difficult to see how to begin to reason on such a question.

[2] How much more revealing, incidentally, is the Communist phrase, "capital accumulation," than the Keynesian "investment"—which is to be sure, more general. "Investment" connotes getting rid of surplus savings, keeping up full employment somehow or other. It leads one to think of the allocation of income, and of the short run generally. It deflects one's attention from the ensuing increase in productivity and/or production. "Capital accumulation" has none of these associations. It simply connotes growth.

[3] Principally Professor Cairncross, in his important "The Place of Capital in Economic Progress" (*International Social Science Bulletin*, UNESCO, 2/1954; this number also contains an admirable bibliography on economic growth).

[4] In 1947–52 in the United States 0·8% of the G.N.P. was spent on research, or from 6 to 8% of business expenditure on new plant (National Science Foundation, *Federal Funds for Research and Development 1952* (Washington, 1953)).

Technical education is a too often forgotten corollary of research; forgotten, no doubt, in part because it is foolishly entered as consumption in the national income accounts. Whatever we may think of elementary education and of arts degrees, which benefit citizenship and culture quite as much as productivity, technical education is surely a kind of investment. The fragmentation of knowledge, as we have seen, demands ever longer courses from more and more, and therefore less intelligent, students.[1] Research and technical education, then, will surely claim an ever larger share of the national income.[2]

Thirdly, there is always an immense lag in the application of new techniques between the best and the worst firms. This is not to be cured by a once for all spurt in investment, since a backward firm changes its technique not only later but also less often than a progressive one. The more technical progress there is, the more obsolescence there is. This, too, increases the need for capital.

Even the mere rationalisation of an industry or the re-deployment of labour within a factory requires some saving to finance it. There are, perhaps, only two serious causes of economic growth that are free of investment costs. The first is the supposed capital-saving trend of modern, as opposed to Victorian, technical progress. Taking years of full employment only, the ratio of national capital to income in the United States has fallen by about 40% since the all-time high of 1911–14.[3] But we have no good ground for extrapolating the course of this ratio in any particular direction. Moreover, the fall is exaggerated by, and may even wholly result from, the omission of consumers' durables from the national capital. Finally, comparable figures for Britain show no such trend.[4]

The second possible cause of growth without capital costs is an increase in the worker's will to work or the adoption by the manager of the American attitude to costs, innovation and output, both so constantly recommended by the Anglo-American productivity teams. But this is clearly the least hopeful of all solutions to the whole problem, since it cannot be applied administratively at all, but is purely a matter of sociology and propaganda —the cost of which would also be an investment! It is fair to claim that investment solutions are quicker and easier. We must therefore increase the *absolute total* of investment, though not necessarily, perhaps, its proportion to the national income for very long.

Naturally all solutions must be applied together. A country that applies both the sociological and the investment solutions (U.S.S.R.) will outgrow

[1] Cf. Ffrangcon Roberts, *op. cit.*, pp. 71–4.

[2] Neglecting, as we must for lack of adequate research, questions of quality, we must note that Britain lags behind many advanced countries in the number of her technical students. And these in turn, as is so depressingly usual, lag behind the Communist countries (Benjamin Fine, *New York Times*, November 7, 1954).

[3] Domar, source as for Cairncross.

[4] Phelps-Brown, ECONOMIC JOURNAL, 1953. Mr. Redfern's figures for Britain do show a slight downward trend, but they, too, omit technical education and consumers' durables (*Economist*, January, 22, 1955).

one that applies only the sociological (United States), just as that country will outgrow us, who apply neither.[1]

We shall not broach here the question of the direction of investment: should it be, for instance, in industry, where owing to the low capital coefficient a little investment leads to much growth, or in public utilities, where the capital coefficient is high and growth correspondingly slow? Or, more significant, should it be in capital goods making consumer goods (*e.g.*, looms) or in capital goods making capital goods (*e.g.*, machine tools)? The latter naturally leads to far higher rates of growth; indeed, without it no sustained growth is possible at all. We use here the word "investment" as a catch-all, neglecting this extremely important distinction. It is no part of my argument, then, that investment is the sole determinant of growth or that its rate stands in any definite relationship to the rate of growth. Enough merely that, if defined to include expenditure on the acquisition of knowledge, it is a—indeed the only—necessary condition of growth: that it is also sometimes a sufficient condition, and that in any case the more investment there is, the more growth there is.

4. Scarcity Economics and Hesitancy

In this and the following sections we discuss the effect of growth-consciousness upon scarcity economics. Too delicate a comprehension of "scarcity" problems, a determination never to violate Professor Lerner's welfare equations for however short a period or in however unimportant a connection, slows up the rate of growth. For it leads to hesitation, whether on the part of the government or of the individual entrepreneur, before investing, even sometimes before beginning current production. It creates an atmosphere hostile to rationalisation, standardisation and mass production, and thus interferes with the technical efficiency of whatever is, despite all hesitation, produced.

This applies more especially to underdeveloped countries. Thus Professor Nurkse has emphasised the need for balanced growth:[2]

> "the difficulty caused by the small size of the market relates to individual investment incentives in any single line of production taken by itself. At least in principle, the difficulty vanishes in the case of a more or less synchronised application of capital to a wide range of different industries. Here is an escape from the deadlock; here the result is an overall enlargement of the market. . . . Experience has certainly shown that large-scale public investment plans, in their practical execution if not in their conception, often have a tendency to develop a marked lack of balance."

[1] *Saving* (defined to cover productive net investment, armaments and the personal consumption of the armed forces, but not depreciation) was the following percentages of net national income at factor cost: U.K., 18% in 1948, 21% in 1951; U.S.A. 20% in 1950; U.S.S.R., 31% in 1937, 41% in 1948. Cf. A. Bergson and H. Heymann, *Soviet National Income and Product*, 1940–1948, pp. 24–5, 70–1. The Soviet figures are exceedingly speculative and controversial.

[2] *Problems of Capital Formation in Underdeveloped Countries*, pp. 11–17.

True, but balance means investing at the pace of the slowest: either of the slowest entrepreneur, which means a snail's pace, or of the slowest-spending government department, which is not quick enough. The balance problem is but a special case of the scarcity problem,[1] and we have here again the dichotomy: good resource allocation versus rapid growth. There can be too much worry about balance. Moderate inflation would tide over many of these temporary difficulties.

All this has been hinted at by Professor Kindleberger,[2] who complains that colonial developers tend to compare their client country with a fully developed one, and noting all the differences "subtract the former from the latter. The difference is a program." The desire for balanced development bogs them down in all sorts of pettifogging detail. It also bogs down the execution of the programme. The conclusion is clearly that Soviet development technique is more effective: choose a few "leading branches" and concentrate on them. The details and the secondary industries can catch up later. The fact that such a programme is unbalanced and violates "scarcity" rules matters less than its superior speed.

5. Scarcity Economics and the Measurement of Growth

All this is by no means to say that we must not consider "scarcity" when investing in new projects or undertaking technical research, for without *some* consideration of the due proportion between one article and another growth may not be growth at all. Thus in a starving community a 10% per annum rise in industrial production combined with a 1% fall in agricultural production—the two being of roughly equal value to start with —may truly be called on grounds of "scarcity" not growth at all but diminution. That is, the Laspeyres index of production, which weights industrial and agricultural products by the scarcity relationships of the initial year, is wholly misleading, and for welfare purposes only the Paasche index applies; and with a suitable choice of the present-year weights this index can easily be arranged to show a fall. This indeed is what might fairly be claimed on welfare grounds for the planned economy in Stalin's life-time, although on strategic grounds we have only too good a reason to know that Laspeyres' index, which gives a heavy weight to the increase in military production, is correct enough.

6. Growth and Consumer Sovereignty

"Scarcity," however, is not the same thing as consumer sovereignty. Wherever "the man in Whitehall (or the Kremlin) knows best" consumer sovereignty is, of course, in abeyance, although resources continue to be scarce *vis-à-vis* competing ends—the manifold, even when properly co-

[1] It is not, as presented by Professor Nurske, a matter of physical bottlenecks, which would be more serious (if there were no foreign exchange), but of markets, *i.e.*, of choice.

[2] *Review of Economics and Statistics*, November 1952, p. 391.

ordinated, ends of Whitehall. There is, of course, no reason why the man in Whitehall should not on occasion know best, and it is mere demagoguery to suggest the opposite. In particular, the voluntary decision of the consumer to save, without which there can under *laissez faire* be neither investment to promote economic growth nor personal security for the individual, is by any reasonable standards always too low in the modern world; except of course when decisions to invest are even lower, causing unemployment. But the talk should always be of under-investment, not over-saving. The latter phrase has the most harmful anti-growth connotations. The "expansionary way out," beloved of Keynesians, is not at all to save less but to invest more. Even when there is deflation, savings are still in an important sense too small: they are smaller than the volume of investment that there ought to be. Though this is not, of course, to deny that in such circumstances an attempt to save less would actually increase investment, up to the level of full employment.

To this irrationality must be added one which follows from competition among consumers, or among producers. This is that the technical specifications laid down by the unco-ordinated purchasers of final or intermediate goods, each thinking only of himself, usually pay too little attention to the economies of rationalisation and standardisation; while the producers, engaged in a struggle for goodwill under imperfect competition, may be aware of these economies but cannot individually enforce them. Here too, then, the man in Whitehall—or the promoter of the merger—knows best. Only by excluding this latter aspect of consumer sovereignty is it possible to satisfy the consumer to the fullest extent out of any given quantity of resources. Only, perhaps, by forced saving can resources be increased, to the consumer's still greater ultimate good. For it is consumer *satisfaction* not sovereignty that is the essence of welfare economics. The substitution of the word sovereignty for "satisfaction" is a piece of unconscious political bias. The sovereignty must in the above cases be violated in order to achieve the satisfaction.

Perfect competition, again, as every undergraduate knows, is the organisation of industry that best ensures consumer sovereignty. Hence many lyrical passages in the text-books, ending in an almost theological *O Altitudo*. And the accepted case against monopoly is that it restricts output below the competitive level. Now empirically this case is quite unproven since the Managerial Revolution. And even if it were proven it would be unimportant, since it would be only a violation of the welfare equations. The real criterion for judging the organisation of an industry is whether it promotes investment and technical progress: and the Managerial Revolution has clearly brought monopoly from the lowest place in this order of merit to the highest—which it shares, let us hasten to add, with any oligopoly of sufficiently large firms.

It is useless to protest that perfect competition is supposed to be the most efficient form. For in this context the word efficient takes on an entirely new and indeed bogus meaning: "responsive to changes in consumer

demand " (not necessarily to changes in long-run scarcity relationships—a monopoly might perceive these better). This has little to do with technical progress or with growth, nay even directly hinders them. Extreme responsiveness of this kind is a disadvantage, leading to low investment and low profitability, and therefore stifling technical research. Also it can hardly exist in conjunction with large scale, which is, of course, a condition of efficiency *proprement dit*. Efficiency—meaning low real cost—is the micro-economic duty of man; given that, growth follows, either spontaneously or through planning that uses up the resources set free. It is characteristic of our growth-blind economics that we blur this vital concept by making the word do duty in the field of " scarcity " too.

7. The Relative Importance of Growth and Choice

Growth conflicts, then, at certain points with consumers' sovereignty and even with " scarcity " itself.[1] It is quite wrong to throw either wholly overboard, however. The advantages of each must as far as possible be quantified, and a balance struck. Thus to correct an important and permanent misallocation of resources is in itself economic growth; for unwanted production is not production at all. The industry/agriculture case quoted above is a good instance. On the other hand, the violation of the welfare equations is not an absolute, unconditional crime; it depends how long and how great the violation is. On any common-sense view of interpersonal or inter-temporal utility comparisons a certain increase in growth is worth any amount of minor allocation errors. Rapid growth diminishes the harm done by violation not only of consumer sovereignty but also of rational allocation in general. There are two main reasons for this.

First there is the " hair brushes and nail brushes " argument. As I have said elsewhere

> " in the Soviet economy there are, as it were, always too few hair brushes and too many nail brushes in view of the resources available, while in a ' capitalist ' economy this proportion is always more nearly right. But the production of both these articles is growing at about 10% per annum in the U.S.S.R. and at about 2% per annum in ' capitalist ' countries. In the end the Soviet citizen will be supplied better even with hair brushes."[2]

The mere fact of growth then floats off even a *permanent* mis-allocation of resources.

But, secondly, the mis-allocation need not be permanent. " Scarcity " need not be violated always in the same direction. Those who object to planning, monopolies, cartels, imperfect competition, etc., on " scarcity " grounds, implicitly assume that these things always exert their malign

[1] This conflict is quite separate, be it noted, from the possibility that one day economic growth will have gone so far that resources will cease to be scarce at all. This is the question of " full Communism," dismissed as irrelevant in Section 2.

[2] Wiles, *Oxford Economic Papers*, October 1953, pp. 315–16.

influence on resource allocation in the same place in the economy; but if monopoly, planning, etc., crop up in different places as time passes—and they do do so—then in the long run the relative quantity of hair brushes and nail brushes will vary about the "scarcity" optimum. If stocks in the hands of the users are large relative to current purchases no great harm at all will be done by these fluctuations, and even if they are not, the right proportion must often be hit as the pendulum of planning, monopoly, etc., swings from one side to the other.

8. "Scarcity" and a Forced Investment Programme

These considerations are particularly important when we weigh the pros and cons of forced saving and forced investment. Both are, as we have seen, clearly inevitable if the actual rate of growth is to exceed the "natural," "warranted" or *laissez faire* rate of growth in the immediate future, whether in undeveloped areas proper or in mature backward areas like Great Britain. This is very far from saying, to repeat, that forced saving and forced investment are the only desideratum for such growth, but they do raise interesting "scarcity" problems that other expansionary measures do not. Suppose that the institutional solution least disruptive of our present political, social and economic structure is adopted in order to effect this programme of forced investment. Current production is sold on a free market, or at least on a market as free as that which we now have. Much greater funds than now are made available for investment by a large Budget surplus above the line. A central committee is set up which in any year must allocate the investment funds that private enterprise has not spontaneously taken up. In practice it will almost certainly do this "irrationally." Ideally, of course, this need not be so. But, in fact, what with human fallibility, the haste with which decisions must be taken, political influence and corruption, the direction of these investment resources will be irrational. Then within twelve months the errors that have been made will be sufficiently clear. In the first instance private enterprise will step in to enlarge the bottlenecks and correct the disproportions created by the planners' previous errors, and these latter will invest the new year's surplus funds in such a manner as to create bottlenecks and disproportions elsewhere. Making *different* errors every year, they will make no serious errors at all.[1]

Again, precisely because of economic growth, really serious over-investment in any particular branch of the economy is unlikely to occur. Provided that a project is technically feasible—that it is not a groundnuts scheme[2]—aggregate demend, growing through additional investment in

[1] The Soviet Five Year Plans have undoubtedly made serious and permanent "scarcity" errors. This is because the *pricing* system, as well as the *allocation* system, has been irrational. Had it not been for this, the very weak but still real influence of the Soviet consumer would have eventually corrected the investment programme. For the extent of this influence compare Wiles, *op. cit.*, pp. 314–15.

[2] This was a technical failure, not a failure to predict demand or an error in the estimation of "scarcity" relationships. It is assumed in the text that gross technical errors of this kind will not be made.

other directions than this, will after an interval float off a particular mistake and render it an *ex post facto* necessity.

Thirdly, even absolute waste—and of this there must be some—is merely a necessary by-product of the superior prosperity that the system brings. Conceive, that is, a project that will become useful neither when completed nor at a later date, but never, no matter how much growth there is. This might be either because it is a technical failure (a groundnuts scheme) or something simply not demanded. Now a fashion house must buy some clothes that turn out to be unsaleable. Champagne manufacturers must make some bottles which explode.[1] If they knew which clothes or which bottles they would, of course, be able to lower their costs. But they do not sit down and produce nothing at all because they do not know; they write off this loss as a cost of production. So the growing economy may write off the irremediable errors of its programme of forced investment as a cost of growth. Suppose a purely numerical example, entirely without empirical warrant: owing to the programme 30% of the national income is invested, instead of 15%, and wasted projects instead of being 2% of the old investment are 6% of the new. Then something like an extra 1½% of the national income will be wasted every year. But the rate of growth rises, let us say, from 2 to 3% compound—we suppose rather sharply diminishing returns to the new investment; and already in two years the national income is greater than it would otherwise have been. Thereafter, of course, the excess becomes very great indeed, though consumption takes a good deal longer to catch up.[2]

Fourthly, it is not true that this sort of planning requires an impossibly long view of the future structure of demand. Such foresight, it is objected, is more than is vouchsafed to the wisest of us. Statistical exercises, whether governmental or private, in demand prediction are often simply bogus.[3] Now while this is perfectly true it does not affect the case for investment planning here put forward. The planner is not asked to estimate future demand for a longer period than the life of the particular capital asset he is at any moment considering. If it happens to be very durable he must, of course, just like a private entrepreneur, make a long-term estimate; if not, not. No new problem of forecasting has arisen. Indeed, one problem has fallen away, and actually *less*, not more, forecasting is required. For since

[1] F. H. Knight, *Risk, Uncertainty and Profit*, p. 213.

[2] Let P be the present and F_n the future national income as now expected. Then $P(1{\cdot}02)^n = F$, where n is any number of years. Under the new dispensation we start with $0{\cdot}98\,P$, owing to the wasted investment projects, and $0{\cdot}98\,P\ (1{\cdot}03)^n = F'$, the new terminal national income. Then $F' = F$ when $n = \dfrac{\log 0{\cdot}98}{\log 1{\cdot}02 - \log 1{\cdot}03}$. Consumption, as opposed to income, takes very much longer to recover. Thus it is not until the twenty-third year that it equals what it would have been in the same year under the old dispensation, and not until the eighth year that it regains the level obtaining when the change was introduced (always supposing we continue to invest 30% of the national income; naturally if we invest less after a while we can easily consume more than we should have been able to under the old dispensation). In the dreary length of these periods lies the explanation of much recent Soviet economic history.

[3] That they are indeed bogus is amply demonstrated by Professor Devons, in *Lloyds Bank Review*, July 1954, pp. 30–5.

the economy is growing more quickly than before, the likelihood of an absolute decline in any branch of production is smaller than before. Now when there is the possibility of an absolute decline, not only extensive investment (expanding capacity at present costs) but also intensive investment (reducing costs at present capacity) becomes a doubtful proposition. We must forecast demand to know if it will really be profitable. Only intra-marginal firms should make such expenditure, and it is a matter of prediction to know just how many—and which—*are* intra-marginal. All this problem is much reduced by greater growth, so that we may fairly claim that investment planning of the type proposed actually reduces the amount of crystal-gazing required.

The amount of misallocation can be exaggerated in yet another way. When investing we make an allocation not only of all the ordinary scarce resources but also of "capital," *i.e.*, of "waiting." A programme of forced investment need involve the misallocation of "waiting" only. For there is always at any moment an enormous number of profitable schemes that ought to be undertaken one day, "when the capital is available." There is no need to undertake unprofitable schemes: the more modest proposal suffices that all the profitable schemes be put in hand at once. Just as an investment cut, imposed by the Government, means merely that schemes are postponed, so an increase means merely that they are accelerated. The direction of investment is still determined by the market, or by direct welfare considerations: the amount only is increased over what would naturally have occurred.

There is a certain tendency for welfare economists, when contemplating the rate of interest, to say: "here is this list of possible schemes; the rate of interest tells us in which order, and, indeed whether, they should be undertaken." This is too static a view: there is no finite list of schemes, nor need there be any such thing as the exhaustion of capital opportunities. Investment causes growth. Therefore, *capital expenditure increases the number of capital opportunities*, making some schemes more desirable than before, others desirable for the first time, and some of both classes technically possible for the first time.

Extra funds for investment should then be fearlessly extracted from the consumer and splashed about. "Scarcity" will not suffer greatly—as Stalin said so very rightly:

> "Some comrades conclude from this that the law of the planned development of the national economy, the planning of the national economy, destroys the principle of profitability. This is quite wrong and quite the contrary is true. If one considers profitability not from the point of view of individual enterprises or branches of production, and not within the span of one year, but from the point of view of the whole national economy and within the span of, say, ten to fifteen years—which would be the only correct approach—then the temporary and unstable profitability of individual enterprises or branches of production cannot even bear comparison with that higher, stable form of profitability, which the operation of the law of the planned develop-

ment of the national economy and the planning of the national economy give us, saving us from periodic economic crises which destroy the national economy and inflict colossal material damage on society, and securing for us the uninterrupted growth of the national economy with its high tempos."[1]

9. Growth and the Climate of Economic Thought

"Plenty, not scarcity, is the essence of economics." There is a sense in which this phrase is the cheapest of unscholarly rabble-rousing. But it contains a great truth. For while an emphasis on choice and scarcity is logically compatible with due insistence on growth, it is not psychologically so. Its implications are all wrong, and economists who are interested in choice are not in fact interested in growth, as Mr. Colin Clark taught us long ago in his brusque but salutary dismissal of the classical economics.[2] Mr. Clark is, of course, as he would be the first to admit, theoretically unsound, but how much healthier than the spectacle of Professor Robbins wringing his hands:

> "The time at our disposal is limited. There are only twenty-four hours in the day. We have to choose between the different uses to which they may be put. The services which others put at our disposal are limited. The material means of achieving ends are limited. We have been turned out of Paradise."[3]

For Communists paradise lies ahead, and we may fairly reply with Karl Marx:

"The philosophers have only *interpreted* the world, in various ways; the point, however, is to *change* it."[4] This means, of course, that economists should make value judgments. But Professor Robbins is most explicitly in favour of that activity, denying to it only the name of economics. His error is merely one of misplaced emphasis, and this article has no other object than to shift that emphasis. It contains, so far as its writer is aware, no concrete innovation. "Scarcity," then, is an effective reply to the redistributive, democratic socialist of the West, whose one idea is to squeeze a quart out of a pint pot. But the totalitarian, growth-conscious socialist of the East has a shattering rejoinder: "Why aren't you making a quart pot, like me?" Over and above all our micro-choices there hangs, as the logicians would say, a meta-choice. The satisfaction of the welfare equations is itself a competing end. We must choose, to some extent, between choice and growth.

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[1] "Economic Problems of Communism," *Bol'shevik*, 18/1952.

[2] *Conditions of Economic Progress*, preface to the first edition. The withdrawal of these strictures in the second edition seems a shade premature: that funds are now available for the study of the national income brings us only a very short way towards an economics of plenty.

[3] *The Nature and Significance of Economic Science*, 2nd Ed. p. 15.

[4] *Theses on Feuerbach.*

MONETARY DISEQUILIBRIA AND THE DYNAMICS OF INFLATION

I. Introduction

The word "inflation" used in the pathological sense denotes either a period of general price increase or the existence of conditions which would produce such a price rise in the absence of external factors such as direct controls. The former is usually called "open inflation" to distinguish it from the latter, "repressed inflation." The degree of pathology cannot be measured by the mere existence of inflation or inflationary pressure or by its extent. For example, comparison of price increases with the accompanying increases in output and employment would help to discriminate among various degrees of inflation. Evaluation for policy purposes would require an appeal to some welfare function. The present paper will not deal with this question.

Open inflation is essentially a dynamic process taking place over time. Hence, analysis of the inflationary process is most appropriately carried out in dynamic terms. This implies specification of the inter-temporal relationships of the various endogenous variables and specification of the initial (disequilibrium) conditions. Writers dealing with the problem of inflation have generally preferred to turn their attention towards the initial conditions and to define in static terms disequilibria which may be characterised as inflationary gaps. Essentially, these conditions have usually turned out to be a net excess supply of money. The intuitive basis for such reasoning is not difficult to discover. If money is in excess supply in the economy as a whole, then, if the price mechanism is free to function, a decline in "the value of money" or a "rise in prices" will follow. But the justification for this view in terms of dynamic process analysis cannot be found in the literature.

It is true that under normal conditions (*i.e.*, negatively sloped demand and positively sloped supply schedules) the existence of excess supply, in terms of money, of any good implies that actual price is above the equilibrium price. Under plausible dynamic assumptions, then, price will decline and the good will fall in value. What is meant by value in this context is relatively clear, because value is ascertained by a direct comparison with money. But what is the value of money, and what constitutes a change in its value? This is, of course, an old question, though it is unanswered (and perhaps unanswerable) in any theoretically satisfactory way. Nevertheless, pragmatic answers have been made in terms of price indices, and these answers have generally not been unsatisfactory. However, with few exceptions, the problem of relating our concepts of changes in the value of money to the initial conditions

which will produce them has been left untouched. The present paper is an exploration of this and related questions.[1]

II. Dynamic Structure of the Monetary Economy

If we postulate an economic system in which each individual independently maximises a utility function which depends upon the size and composition of his stock of assets, we can deduce the excess demand equations of each individual for each good as functions of current prices, of his price expectations and his initial asset position.[2] Summing over all individuals, we can obtain market excess-demand equations for all of the goods as functions of the same variables.

The number of variables representing expected prices in such a system would be very large, and a theory using all of them would almost necessarily be devoid of content. However, a few simplifying assumptions will enable us to cut down the number and to gain some insight into the relationship between expectations and stability. First of all, we shall assume that for any price, the expectations of all individuals can be adequately represented by those of a " representative individual." This device can be justified by the fact that whatever amount the market demands, there is some price expectation which, if held by everybody, would result in the same demand. Secondly, we shall rule out " cross effects " of price expectations on excess demand, *i.e.*, we shall assume that only expected prices for the i^{th} good significantly affect excess demand for that good. Though not strictly realistic, this assumption is a defensible first approximation to reality.

We still have expected prices for each good for all future time periods. Though the practice is frequent, it is difficult to justify the assumption that expectations for all future time periods can be represented by one " expected price." For a given expectation about prices one month hence, demand can vary a great deal according to what expectations are for subsequent months. Reactions to price changes which are thought to be one way movements will differ greatly from reactions to changes which are expected to be reversed. This difficulty can be partially avoided by the introduction of the distinction between induced and autonomous expectations of price changes. The difference between any expected price and its corresponding current price can be thought of as divisible into two components. One part is, from the point of view of a short-run dynamic model, autonomous. It is the result of knowledge about price histories and about causal factors relating to particular prices. A new invention may set up the expectation that a certain price will fall when the invention is applied to production. This sort of expectation can be taken as exogenous. On the

[1] This paper has grown out of a thesis written at Nuffield College, Oxford, under Professor D. G. Champernowne. It has also greatly benefited from criticisms and suggestions made by Professor Robert Solow of M.I.T. I am very grateful to both for their generous and valuable assistance.

[2] See, for example, Jacob Marschak, " The Rationale of the Demand for Money and of ' Money Illusion,' " *Metroeconomica*, Vol. 2, August 1950, pp. 71–100, and *Cowles Commission Paper*, N.S. No. 46.

other hand, part of the expected change in prices is induced by actual changes in current prices. These expectations are definitely endogenous to the dynamic system, and dynamic stability can be affected by them. The induced component of expected price changes for all future periods is much more likely to have the same sign than is the autonomous part. In the analysis that follows we shall assume that induced expectations can be represented by one " expected price " for each good and that autonomous expected price changes are small.

On the basis of the foregoing assumptions, we can deduce excess demand equations of the form

$$X_i = X_i(P_1, \ldots, P_n, P'_i, A) \qquad (i = 1, \ldots, n) \tag{2.1}$$

for the n goods, where P' indicates the expected price and A is a shorthand notation for the initial asset stock and its distribution. Taking A as a parameter, we have n equations in the $3n$ variables X_i, P_i and P'_i.[1] In equilibrium, demand must equal supply in each market, and expected prices must equal current prices, *i.e.*,

$$X_i = 0 \tag{2.2}$$

$$P'_i = P_i \tag{2.3}$$

The $3n$ equations (2.1), (2.2) and (2.3) are sufficient to determine all of the variables. From a dynamic point of view, the conditions (2.3) are necessary; if expected prices do not equal present prices, the latter cannot be in equilibrium. For if the expectations that prices will change are correct, actual prices will change whence they were not in equilibrium. If the expectations are incorrect, then current behaviour is based upon false expectations, and hence it will be modified as the expectations are proved wrong.

Analysis of the motion of the system requires assumptions about its dynamic behaviour. A variety of fairly simple price-reaction equations and induced expectation functions is possible. The question of choice among them ought to be empirical. However, with no direct evidence available, we are forced to some arbitrariness and can only fall back on intuitive plausibility as our guide. The conclusions of this paper are largely independent of the particular form of the price-reaction equations. Several alternative hypotheses will be discussed. Let us assume that all prices are flexible and that their behaviour is governed by equations of the form [2]

$$\dot{P}_i = K_i X_i \tag{2.4}$$

where the K_i are positive constants. These equations state that the speed of price increase in any market is directly proportional to the size of excess

[1] As Marschak has shown, *op. cit.*, these equations will be non-homogeneous in the actual and expected absolute prices. Non-homogeneity is caused by the effects of price changes on cash balances and other fixed-priced assets and by general hysteresis.

[2] The notation $\dot{P}_i$ will be used to indicate the first derivative of the variable P_i with respect to time.

demand.[1] Further, let us assume that induced changes in expected prices are governed by the relationship

$$P'_i = P_i + \rho_i \dot{P}_i \tag{2.5}$$

This is a simple variant of Metzler's "coefficient of expectations."[2] It is clearly compatible with the static equilibrium conditions (2.3), for when $X_i = 0$, $\dot{P}_i = 0$ and hence $P'_i = P_i$. When $\rho_i = 0$, expectations are "static," *i.e.*, induced expectations are zero and existing prices are expected to persist. When $\rho_i > 0$, expectations are "extrapolative," *i.e.*, expected prices are an extrapolation of the movement of actual prices. When $\rho_i < 0$, expectations might be described as "conservative" in that expected prices lag behind current prices and movements in current prices are expected to be reversed.

The dynamic stability of general equilibrium has been analysed by Samuelson, Lange, Metzler and others, but their analysis has been confined to a model which does not include expectational effects.[3] In the most general case the stability conditions are mathematically quite complicated and do not lend themselves to economic interpretation. However, in some important cases it is possible to analyse the effects of extrapolative expectations on the stability of a system that would be dynamically stable with static expectations.

Consider first the case of an isolated market for one good and let its behaviour be governed by equations of the form

$$X = X(P, P') \tag{2.6}$$

and (2.4) and (2.5), with equilibrium conditions as before and with P^0 the equilibrium price. Expanding (2.6) in the neighbourhood of equilibrium and retaining only linear terms, by Taylor's theorem, we obtain

$$\dot{P} = K[a(P - P^0) + b(P' - P^0)] \tag{2.7}$$

where $a = \dfrac{\partial X}{\partial P}$ and $b = \dfrac{\partial X}{\partial P'}$, both evaluated at the point P^0. For a good that is not inferior, $a < 0$ and normally $b > 0$. Substituting in (2.5) and letting P represent deviations from equilibrium, we obtain

$$\dot{P} = \frac{K(a + b)}{1 - Kb\rho} P \tag{2.8}$$

with solution

$$P(t) = P(0)e^{\frac{K(a+b)}{1-Kb\rho}t} \tag{2.9}$$

[1] Price reaction equations of this form have been used by Samuelson and Lange. See P. A. Samuelson, "The Stability of Equilibrium, Comparative Statics and Dynamics," *Econometrica*, Vol. 9, No. 2, April 1941, p. 102, and Oscar Lange, "The Stability of Economic Equilibrium," Appendix to *Price Flexibility and Employment*, Cowles Commission Monograph No. 8 (Principia Press, Bloomington, Indiana, 1944), p. 94.

[2] L. A. Metzler, "The Nature and Stability of Inventory Cycles," *Review of Economic Statistics*, August 1941, p. 119.

[3] See Samuelson and Lange, *op. cit.*, also Samuelson, *Foundations of Economic Analysis* (Cambridge, Mass., 1947), Part II, and Metzler, "Stability of Multiple Markets: The Hicks Conditions," *Econometrica*, Vol. XIII, No. 4, October 1945, pp. 277–92.

If expectations are static, *i.e.*, if $\rho = 0$, stability requires that $K(a + b) < 0$. If the price is normally flexible, $K > 0$. If the good in question is not an inferior good, it is safe to assume that $(a + b) < 0$, and hence the market is stable. The latter inequality merely states that in the neighbourhood of equilibrium the net effect of a price increase that is expected to persist is to lower excess demand. If the conditions for stability with $\rho = 0$ are fulfilled, what requirements can we specify for ρ in order that expectations will not destabilise the market? A glance at (2.9) will indicate that the necessary and sufficient condition for stability will be

$$\frac{1}{K} > b\rho \tag{2.10}$$

Essentially, this inequality requires that the coefficient of price insensitivity to excess demand, *i.e.*, the reciprocal of the price reaction coefficient, be greater than the destabilising force of the " extrapolative " expectations. It is clear that $\rho \leq 0$ is not a necessary condition for stability except in the limiting case of instantaneous adjustment.[1]

This result can be generalised to the multiple market system (2.1). Linearising and letting the P_i and P'_i represent deviations from equlibrium as before, and substituting (2.5) for the expected prices, we obtain the system of equations

$$\dot{P}_i = K_i \sum_j a_{ij} P_j + K_i b_i P_i + K_i b_i \rho_i \dot{P}_i \qquad (i = 1, \ldots, n) \tag{2.11}$$

where $a_{ij} = \dfrac{\partial X_i}{\partial P_j}$ and $b_i = \dfrac{\partial X_i}{\partial P'_i}$, both evaluated at the point of equilibrium. If we set the ρ_i equal to zero, the roots of the system with static expectations will be the characteristic roots of the matrix

$$M = \begin{vmatrix} K_1(a_{11} + b_1) & K_1 a_{12} & \ldots & K_1 a_{1n} \\ K_2 a_{21} & K_2(a_{11} + b_2) & & K_2 a_{2n} \\ \cdot & \cdot & & \\ \cdot & \cdot & & \\ \cdot & \cdot & & \\ K_n a_{n1} & K_n a_{n2} & \ldots & K_n(a_{nn} + b_n) \end{vmatrix}$$

According to a theorem proved by Metzler,[2] if all of the goods in the system are gross substitutes, necessary and sufficient conditions for stability

[1] The comparative dynamical properties of this result seem pathological. As ρ approaches its critical value from the stable side, the root of the system goes to $-\infty$. As ρ crosses its critical value, the root shifts to $+\infty$. This is the result of the unreal assumption of instantaneous reactions made in equations (2.4) and (2.5). A better approximation to the phenomena we are considering could be made by postulating lags in the adjustment of excess demand to price changes This would lead to a mixed difference-differential equation of the form $\dot{P}(t) = K(a + b)P(t - \theta) + Kb\rho\dot{P}(t - \theta)$, where θ is a time lag. In order that all solutions of this equation be stable, it is again necessary that $K(a + b) < 0$. It can also be shown that $Kb\rho \leq 1$ is necessary and that $Kb\rho$ will have a critical value less than or equal to unity (for real parts of complex roots). As $Kb\rho$ crosses its critical value, the real part of the dominant complex root will be carried smoothly from negative to positive values. For a larger value of $Kb\rho$, the system will acquire a positive real root.

[2] See Metzler, *op. cit.*, p. 285.

are that the principal minors of the matrix alternate in sign, with sign $(-1)^n$, where n is the order of the minor.[1] The meaning of all goods being gross substitutes is that an increase in the price of the i^{th} good will raise excess demand for every other good, whence $a_{ij} > 0$ for $i \neq j$. Then the system is stable if and only if the matrix M is "Hicksian." The Metzler theorem can be extended to include non-static expectations by the following theorem: *If the parameters of the system with static expectations fulfil the conditions for the Metzler theorem, then a necessary and sufficient condition for the stability of the system with any expectations is that* $1/K_i > b_i\rho_i$ *for all markets.* As in the single market case, $\rho_i \leq 0$ is not generally necessary for stability.[2]

So far we have assumed constant parameters and a constant stock of money. Under such conditions, equilibrium is uniquely defined by equations (2.1), (2.2) and (2.3). Local stability conditions have been discussed. The question of their relevance to the stability of the system in general remains. For larger displacements, local stability conditions will not be relevant, since they are based on linearity assumptions which can be presumed valid only in the neighbourhood of equilibrium. It is necessary to investigate what sorts of non-linearities are likely to be encountered by the system during an inflationary process. First of all, there may be money shortage. As long as the volume of transactions expands along with price increases, one would expect the transactions demand for cash balances to rise less than proportionately with money income.[3]

Once the stage of pure inflation is reached, transactions demand for cash and the price level will be related linearly. However, the damping effect of the constant money supply may be offset by increasing velocity of circulation. Velocity is largely dependent upon price expectations and institutional factors. As the inflationary process accelerates, rising prices will tend to weaken the presumption of stability, and the coefficients of expectations themselves will tend to rise with the rate of price increase. But the resultant increase in velocity will be limited by institutional factors, and

[1] This condition on the minors is known as the Hicks condition. See the mathematical appendix of Professor Hicks' *Value and Capital* (Oxford, 1939). The Hicks condition is necessary and sufficient in other cases also. For example, Professor Samuelson has shown it is also necessary and sufficient when the matrix M is symmetrical, regardless of the signs of the elements. See Samuelson, "The Stability of Equilibrium, . . ." *op. cit.*, p. 110.

[2] This conclusion would seem to conflict with the analysis of Professor Hicks, who uses a related concept, the "elasticity of expectations," with a critical value, unity, which is independent of market speeds of adjustment. "If elasticities of expectations are generally greater than unity, so that people interpret a change in prices . . . as an indication that they will go on changing in the same direction, then a rise in all prices by so much per cent (with constant rate of interest) will make demands generally greater than supplies, so that the rise in prices will continue. A system with elasticities of expectations greater than unity, and constant rate of interest, is definitely unstable" (*Value and Capital* (Oxford, 1939), p. 255). Professor Hicks' analysis is carried on in terms of instantaneous adjustments in discreet successive time periods. In this limiting case the K_i will tend towards infinity and the critical value of ρ_i will tend towards zero. In the more general case the extrapolative expectations described by Professor Hicks need not imply instability, even when the interest rate is constant (and equilibrium is neutral). Because of friction and the inertia of the system, the effects of the expectations may be damped, and the system may asymptotically converge to equilibrium.

[3] See W. J. Baumol, "The Transactions Demand for Cash: An Inventory Theoretic Approach," *Quarterly Journal of Economics*, Vol. LXVI, November 1952, pp. 545–56.

it is probable that an institutional maximum exists. In such circumstances a fixed money supply will eventually limit the possible increase in the price level.

In inflationary conditions assumption of a constant money supply is quite unrealistic. In the face of rising prices, governments trying to maintain the real value of their expenditures usually must resort to some monetary expansion. Political pressures on the monetary authorities are often irresistible. As a working hypothesis, assumption of a constant interest rate might be more realistic. In such a case, the money supply and the price level are indeterminate. In terms of the model, an extra variable will have been added without its corresponding determining equation. The effect of this on the dynamic system will be to make one of its roots equal to zero, whence the system will be in neutral equilibrium, its position depending upon exogenous shocks and its own friction and inertia. Systems in neutral equilibrium may be characterised as more or less sensitive in so far as any given exogenous shock produces a greater or lesser displacement from the old to the new equilibrium position. Sociological considerations would support the view that highly sensitive systems will tend to be unstable.

III. Aggregative Conditions for Monetary Disequilibrium

If barter is ruled out, the demand for any good in a monetary economy is a supply of an equivalent amount of money, and vice versa. Designating money as the $(n + 1)$st good, we can state this as Walras' Law in the form

$$\sum_{i=1}^{n} P_i X_i \equiv X_{n+1} \tag{3.1}$$

i.e., the net monetary excess demand for all goods is equivalent to an equal excess supply of money. Excess demands can also be aggregated and expressed in macro-economic terms. Let I represent total *ex ante* investment and let S represent total *ex ante* savings, both measured in money values at current prices. Then we may write [1]

$$I - S = \sum_{i=1}^{n} P_i X_i = - X_{n+1} \tag{3.2}$$

For the sake of symmetry in the discussion which follows, let us modify equation (2.4) and work with the similar hypothesis

$$\dot{P}_i = P_i \,.\, K_i \,.\, \frac{X_i}{q_i} \tag{3.3}$$

where q_i represents the *equilibrium* quantity supplied of the i^{th} good. These equations state that the *relative* rate of change in any price is directly proportional to the excess demand for the good, expressed as a fraction of the quantity supplied. With the static and dynamic behaviour of the system specified, we are now prepared to investigate the nature of situations that will produce inflation.

[1] See, for example, Bent Hansen, *A Study in the Theory of Inflation* (George Allen and Unwin, London, 1951), pp. 37 and 202.

Variants of conditions described by

$$\sum_{i=1}^{n} P_i X_i > 0 \tag{3.4}$$

i.e., monetary excess demand in the economy as a whole, have most frequently been used as criteria for the existence of inflationary pressure. For example, Keynes defined " a state of true inflation " in these terms: " When full employment is reached, any attempt to increase investment still further will set up a tendency in money-prices to rise without limit, irrespective of the marginal propensity to consume," or, in other words, a state of inflation is reached when investment exceeds savings *ex ante* at full employment.[1] These conditions can be formalised by inequality (3.4) and a similar inequality expressing a non-negative sum of monetary excess demand in the markets for productive services. In his *Study of the Theory of Inflation* Dr. Bent Hansen describes " a monetary pressure of inflation " by inequality (3.4) and the additional conditions that there be no net monetary excess supply either in the markets for productive services or in the composite commodity-market.[2]

The significance of the additional supporting conditions is that the possibility of offsetting or compensating (in a welfare sense) quantity increases in response to excess demand is to be precluded by the postulation of some bottleneck in the expansion of output in order that (3.4) will imply a pathological situation of pure price increases. The Keynes and Hansen subsidiary conditions must stand or fall as empirical judgments. The use of the full-employment condition must be based on the judgment that the economy reaches full employment of labour before it comes up against important capacity limitations. If capacity limitations are likely to be encountered first, as, for example, in an economy suffering from recent war damage, pathology may arise before full employment, and absence of net monetary excess supply in the capital-goods markets might be a more appropriate condition for describing inflation. Both the Keynes and the Hansen conditions rely heavily upon (3.4), the existence of a net excess supply of money. From a static point of view, this procedure is unexceptionable. It essentially relies upon an analogy with the case of one good in excess supply. Since its value must fall, the authors reason, the value of money must also fall when it is in excess supply. But what is " the value of money " that will fall when money is in excess supply? We must define a price index that will move in response to the " error signal " $I - S$. Let us postulate that its dynamic behaviour is governed by the simple law

$$\dot{P}_m = K(I - S) \tag{3.5}$$

where K is a positive constant, whence P_m will rise when $I - S > 0$ and fall when $I - S < 0$. The "value of money" might be defined as the reciprocal

[1] J. M. Keynes, *The General Theory of Employment Interest and Money* (London, 1936), pp. 118–19.
[2] *Op. cit.*, pp. 5–7.

of P_m, though such a procedure would be arbitrary. The equations (3.5), (3.2) and (3.3) taken together imply

$$\dot{P}_m = K \sum_{i=1}^{n} \frac{q_i}{\overline{K}_i} \dot{P}_i \tag{3.6}$$

which, in turn, implies an index of the form

$$P_m = \frac{\sum \frac{q_i}{\overline{K}_i} P_i}{\sum \frac{q_i}{\overline{K}_i} \overline{P}_i} \tag{3.7}$$

using equilibrium values as weights. This index differs from the usual Laspeyres index in that the quantity weights are divided by the price-reaction coefficients. Thus, highly flexible prices get relatively smaller weights than they would in the Laspeyres index, P_L. Consequently, we would expect the time-profile of P_m to display considerably more stability than that of P_L. But whatever its characteristics may prove to be, P_m as defined by (3.7), is the direct logical consequence of the Keynes–Hansen condition in a dynamic context.

A price index of this sort was intuitively perceived by Myrdal when he was attempting to relate the Wicksellian equilibrium conditions in the capital market to constancy of the price level. He argued that maintenance of monetary equilibrium would imply constancy of a price index. "This determining price level should be defined as an index in which the individual prices are weighted, first, with respect to their stickiness of reaction, and, second, with respect to their relative importance in the calculations of profitability by the entrepreneurs and consequently in the volume of real investment." [1] Though his discussion is not entirely clear on this point, the correspondence between what he was trying to do and equations (3.5) – (3.7) and also the similarity between P_m and his description would seem to indicate that Myrdal saw this important relationship.

The Myrdal index, if we may call it that, is vulnerable to serious criticism. The most obvious objection is that it is not a definition of the price level in the usual sense. If all the K_i were of the same, the index would be an ordinary Laspeyres index. But if some of the K_i are relatively large, those prices will receive proportionately less weight. For rigid prices, the K_i will be equal to or nearly equal to zero, and these prices will be given infinite or extremely large weights so that they will tend to dominate the index. If the weights were correctly estimated and the prices rose smoothly, this problem would be less serious because an inflexible price, though having a smaller reaction coefficient and hence a larger weight, would change correspondingly less. Thus, there would be some off-setting. If the coefficient were not appropriate to the period in question, but rather to the historical period in which it was found, then this off-setting would not necessarily occur. Dr. Hansen has suggested that this difficulty can be ameliorated if the reaction coefficients

[1] Gunnar Myrdal, *Monetary Equilibrium* (London, 1939), pp. 136–7.

are defined as their average value over a long period, as practically no price is perpetually fixed.[1] Then, at least, no weights would be infinite. In the present context, the relevant long period would be the length of time that it takes the system to get (arbitrarily) close to its dynamic equilibrium position.

The important point here is that objections made to the Myrdal index must also apply to the Keynes–Hansen conditions if we are considering inflation as a dynamic process. Therefore rejection of the former as a poor indicator of the price level must imply rejection of the latter as a description of conditions under which the price level will rise.

IV. The Initial Conditions for an Inflationary Process

The alternative to the specification of initial conditions and the study of the process that will follow them is to identify the process in which we are interested and to work back to the initial conditions that will produce it. For our present problem, a rise in the price level, an acceptable definition of the price level is necessary. Any aggregative index is bound to be, to some extent, arbitrary. This is true of the Myrdal index and also of the Laspeyres index. Nevertheless, the latter carries a certain amount of intuitive appeal which the former lacks. It bears some relationship, however tenuous, to the rest of economic theory, and it is the index normally computed. Since the argument on this point could be endless, it would be best to accept the case for the Laspeyres index either out of conviction or for the sake of further discussion.

The Laspeyres index is defined as

$$P_L = \frac{\sum q_i P_i}{\sum q_i \bar{P}_i} \tag{4.1}$$

where $\bar{P}_i$ is the base period value of P_i. Our problem is to decide under what conditions P_L will rise, given plausible dynamic assumptions. Differentiating (4.1) with respect to time, we obtain

$$\dot{P}_L = \frac{\sum q_i \dot{P}_i}{\sum q_i \bar{P}_i} \tag{4.2}$$

If we adopt the dynamic hypothesis (3.3), by substitution, (4.2) becomes

$$\dot{P}_L = \frac{\sum K_i P_i X_i}{\sum q_i \bar{P}_i} \tag{4.3}$$

whence

$$\dot{P}_L \gtreqless 0 \text{ as } \sum K_i P_i X_i \gtreqless 0$$

Thus, the initial condition for an inflationary development is that the weighted sum of monetary excess demands weighted by their respective reaction coefficients be positive, *i.e.*,

$$\sum K_i P_i X_i > 0 \tag{4.4}$$

This condition has its analytic basis to recommend it, for under the plausible dynamic assumptions, (3.3), it implies that the price level, as usually defined,

[1] *Op. cit.*, p. 230.

will rise. Furthermore, the size of the weighted sum can be taken as an indicator of the speed with which inflation will proceed.[1] Inequality (4.4) coincides with the Keynes–Hansen condition (3.4) only in the unrealistic case in which all of the K_i are equal.[2]

The economic significance of (4.4) is that a situation can be characterised as inflationary when monetary excess demands are concentrated in sectors which are important in terms of the sensitivity of their prices to excess demands, and hence, which are likely to affect the Laspeyres price index. Excess demands in flexible price sectors receive larger weights than they do in relatively rigid price sectors, for they are potentially more significant for the price level.[3] Sectors with rigid prices receive little or no weight for they are not apt to be of great importance from the point of view of inflation. Thus (4.4) makes allowance for the institutional facts of imperfect competition, lags in adjustment and price rigidities. This result may be thought of as a theoretical basis for the practical point made by Professor Galbraith[4] that stabilisation policies must concentrate upon the flexible price sectors where the problem of control is more serious, whereas the more rigid administered-price sectors are more apt to take care of themselves.

On the other hand, a mere positive sum of monetary excess demands in the economy as a whole does not tell us whether there will be a general price increase because it does not tell us where the excess demands are located. Thus, it is neither necessary nor sufficient for such a price increase: insufficient because with total excess demand positive there may be excess supply in the important sectors; unnecessary because a negative total of excess demands is consistent with a concentration of the positive excess demands in important and sensitive sectors.

V. Generalisation to Other Methods of Price Formation

The results of Section IV were based upon two rather special assumptions, namely, that all prices are flexible and that their motions are governed by a law of the form (3.3). These assumptions can both be relaxed and the principles of Section IV will still be applicable. In general, the procedure will be to substitute other expressions into (4.2) for the individual rates of price change and then to deduce the conditions under which the price index will rise. To do this, we may use a variety of dynamic hypotheses and a variety of " error signals " that will produce price changes.

Methods of price formation may be grouped into three main categories: flexible prices, cost-determined prices and rigid prices. Prices of goods and services traded in perfectly competitive markets are flexible *par excellence*.[5]

[1] It is a general property of linear systems that the speed of reaction is proportional to the magnitude of the disequilibrium.

[2] Hansen, *op. cit.*, p. 222.

[3] They are not weighted in (3.4) because they are inversely weighted in P_m.

[4] J. K. Galbraith, *The Theory of Price Control* (Cambridge, Mass.), 1952.

[5] Use of the words " excess demand " should not be allowed to hide the fact that the " cost-push " side of price increases has not been overlooked. Cost increases, *cet. par.*, shift supply curves to the left, thereby increasing *excess* demand and exerting an upward pressure on prices.

If we appropriately redefine excess demand, we can also include some forms of imperfect competition in this category—in particular, profit-maximising monopoly and monopolistic competition where it exists on only one side of the market with perfect competition on the other so that sellers or buyers are confronted with determinate and differentiable demand or supply functions. Following Lange,[1] we can say that the magnitude which the non-atomistic seller or buyer attempts to maximise is a function of all the prices, or

$$U_i = U_i(P_1, \ldots, P_n). \tag{5.1}$$

Of these prices, he has control over one, P_i, with respect to which he attempts to maximise U_i. We can also define a function

$$X_i(P_1, \ldots, P_n) = \frac{\partial U_i}{\partial P_i} \tag{5.2}$$

which Lange calls a " marginal gain function." When $X_i = 0$, profit is at a maximum and the seller or buyer is in equilibrium. Further, maximisation requires that $X_i \gtrless 0$ as P_i is less or greater than the equilibrium price, so that when X_i is positive he raises his price and when X_i is negative he lowers it. Thus, the function (5.2) behaves in just the same way as excess demand and can be interpreted as a special case of the latter.

A special type of flexible price is one whose flexibility has an upward bias. This case, a consequence of uncertainty and market imperfection, is probably frequent. It results from the fact that a price increase in an imperfect market will be followed by an immediate gain in unit profit, which at worst may be more than offset by a loss in sales volume only after the passage of a period of time during which buyers find new sources of supply, whereas a price decrease results in an immediate loss in unit profit which may be balanced only later by an increase in sales. In the latter case, if sales are to increase as a result of the price cut, to the extent that present customers do not increase their purchases, sales will increase only gradually as potential customers become aware of the lower price.[2] Consequently, one would expect much less resistance to price increases than to price cuts on the part of sellers. This is especially likely in inflationary conditions when sellers can discount heavily the probability of a future loss from the eventual fall in sales because of the likelihood of an intervening general price increase. Such prices can be introduced into (4.4) by the use of a kinked function relating the speed of price change to excess demand, in which the positive branch is steeper than the negative branch. This can be represented by a larger K_i for $X_i > 0$ and a smaller K_i for $X_i < 0$. More complicated non-linearities can be introduced in a similar fashion.

Cost-determined prices rise or fall with an index of other prices.[3]

[1] *Op. cit.*, Appendix.

[2] See Tibor Scitovsky, *Welfare and Competition* (Chicago, 1951), pp. 272–8.

[3] The term is used by Ralph Turvey, " Some Aspects of the Theory of Inflation in a Closed Economy," Economic Journal, Vol. LXI, September 1951, p. 532.

This class includes industrial prices which are set on a cost-plus constant percentage mark-up basis, wages and salaries that are related to a cost-of-living index, some government transfer payments and some government purchases (" cost plus "), and controlled prices which are allowed to rise only with cost increases. For any cost-determined price, it can be said that there exists an equilibrium ratio between it and an index of prices relevant for its determination. It is possible to deal with these prices in a manner similar to the way in which we treated flexible prices. For any cost-determined price, P_i, let there be an index of other prices, π_i, to which it is related, and let γ_i be the equilibrium ratio between them. Then we may define a new variable $\left(\gamma_i - \frac{P_i}{\pi_i}\right)$ with a critical value of zero and which can be thought of as similar, in its effects on prices, to excess demand. For cost-determined prices, then, we may define

$$X_i = \left(\gamma_i - \frac{P_i}{\pi_i}\right) \tag{5.3}$$

and assume that they obey some law of a form such as (2.4) or (3.3).

Cost-determined prices are affected only indirectly by monetary disequilibria. Nevertheless, they are important to monetary theory because of their ability to propagate excess demands and supplies from some competitive markets to others. Markets of this kind can be included in multiple-market dynamic systems, since their rates of price change are linear functions of the other prices. Their role in the dynamic process can be studied in this way. Strictly speaking, it would be incorrect to describe $\left(\gamma_i - \frac{P_i}{\pi_i}\right) \gtrless 0$ as a *monetary* disequilibrium. Nevertheless, we may include these magnitudes in the weighted sum (4.5) if we wish to assess the total extent of price disequilibrium in the system.

Rigid prices may be defined as those prices whose coefficients of reaction, either to excess demand or to other price changes, are equal to zero. This class includes some contractual payments, pensions and the like, some wages and salaries, exports and imports for countries whose sales and purchases are small in relation to world markets, some cases of oligopoly and rigidly controlled prices. In the case of oligopoly a rigid price is likely to become cost determined during a period of inflation when all competitors can be considered to be subject to the same cost increases. The term " rigid " is not meant to imply that these prices are absolutely fixed. Rather, it means that changes in them are not caused by monetary disequilibria, and that they must therefore be considered as exogenous from the point of view of monetary theory.

The formal nicety of condition (4.4) is a direct consequence of the assumption that price changes are governed by the relationship (3.3). This assumption also can be relaxed and other hypotheses substituted for it. In each case a new description of the initial conditions necessary and sufficient

for an increase in P_L will result. Three examples of alternative hypotheses about price formation are the following:

$$\dot{P}_i = K_i X_i \tag{5.4}$$

$$\dot{P}_i = P_i K_i X_i \tag{5.5}$$

$$\dot{P}_i = \begin{cases} K_i & X_i > 0 \\ 0 & X_i = 0 \\ -K_i & X_i < 0 \end{cases} \tag{5.6}$$

The first equation is (2.4) restated. The second equation states that the *relative* rate of price change is proportional to the size of excess demand. The third hypothesis is that the absolute rate of price change is a constant which is independent of the size of excess demand and which is dependent on it only for direction. Substitution of each of these equations, in turn, into (4.2) yields the following conditions for $\dot{P}_L > 0$:

$$\sum q_i K_i X_i > 0 \tag{5.4'}$$

$$\sum q_i K_i P_i X_i > 0 \tag{5.5'}$$

$$\sum q_i K_i > 0 \tag{5.6'}$$

In (5.6') the K_i must be taken with the appropriate sign. If prices in different sectors are governed by different laws of motion, then the aggregative criterion for the existence of inflationary pressure in the economy as a whole will be that the sum of (4.4), (5.4'), (5.5') and (5.6'), where each summation is over the appropriate space, be positive.

The use of these alternative hypotheses about the dynamics of price formation emphasises the special character of the assumptions upon which the Myrdal index was based and casts further doubt on the relevance of the Keynes–Hansen condition, (3.4), to the dynamics of the price level. If all prices are governed by (5.5), then inequality (3.4) will only imply an increase in the price index [1]

$$\frac{\sum (1/K_i) P_i}{\sum (1/K_i) \bar{P}_i} \tag{5.7}$$

which is clearly not related to our usual notions of the price level. Similar operation with the other hypotheses yields nonsense results or no price indices at all. Under no hypothesis about the relationship between rate of price change and excess demand which includes the assumption that speeds of adjustment differ in different markets will the inequality (3.5) yield information about the direction of change in the Laspeyres price index.[2]

[1] The relationship between (3.4), (5.5) and (5.7) is shown by Dr. Hansen, *op. cit.*, pp. 226–7.

[2] Obviously, we have a dilemma. On the one hand, we have the Keynes–Hansen condition (3.4), on the other the Laspeyres price index, both time-honoured concepts. It would be desirable to relate them, and Dr. Hansen has attempted to do so. However, as he has shown, they can be related only when it can be assumed that the reaction equations are of the form (3.3) with all the K_i of equal value. In an interesting discussion he does recognise the unreality of the assumption that all the K_i are equal. Also he criticises the indices (3.7) and (5.7). Yet he retains and relies

VI. Conclusions

The results of this analysis depend upon our beliefs about the values of the expectation coefficients and the market speeds of adjustment. These parameters do not lend themselves to easy quantification. Econometric studies may give us information about speeds of adjustment in some markets, but the difficulty encountered in attempting to measure excess demand will usually make estimation of the K_i somewhat hazardous. Though it is possible to conceive of an ideal experiment which would permit measurement of the coefficients of expectation, thus making the concept operational, it is highly doubtful that any practical method exists for their estimation. Indeed, it is probably true that with the exception of professional speculators, most people do not give precise values to their price expectations. Rather, they react to price movements by extrapolating the trend, by expecting that it will be reversed or by assuming that prices will remain at their new values. However, ease of quantification is not a necessary attribute of economic theory. In the absence of detailed empirical knowledge about the dynamical parameters of the economic system, we can deduce significant *qualitative* conclusions. Though we may not be able to measure them, we can often say that expectations are extrapolative or static. In this paper, it has been shown that the existence of extrapolative expectations is not incompatible with stable equilibrium. If we observe that expectations have a destabilising effect, we may conclude that their force has overcome the damping effects of the lags and general inertia of the system.

The weighted sum of excess demand of the form (4.4) is a more complicated concept than the Keynesian *ex ante* inflationary gap and it is undoubtedly much more difficult to estimate. Nevertheless, it does provide an unambiguous indicator of the direction of movement of the price level. The Keynesian concept, with its equal implicit weights, does not. A casual glance at the variety of market structures in the economy must indicate that the speeds of adjustment differ from market to market. It ought to be possible to devise a set of weights which would roughly reflect this. By the logic of our analysis, we may conclude that the weighted sum would provide an improved guide to monetary policy.

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heavily upon (3.4) throughout the book, thus implying a belief in its relevance. His discussion would tend to support the view that he favors retaining both (3.4) and the Laspeyres index even at the required price. For static analysis of repressed inflation, with which much of the book is concerned, the K_i assumption is probably not seriously limiting. This is one way out of the dilemma. Myrdal chose a second way out. Hansen briefly considers the alternative possibility—the one developed in this paper—of retaining the unequal K_i and the Laspeyres index at the expense of (3.4) (pp. 227–8). However, with a curious algebraic error (last line of p. 227), he incorrectly weights the excess demands, reaches a nonsense result and rejects the whole procedure, having failed to grasp the significance of the correctly weighted sum. Of all possible ways out of the dilemma, he seems most definite in his rejection of this one. "So we shall continue with the 'relevant' price-indices, that is those indices for which the unweighted monetary excess demand ... give an unambiguous indication of the development tendency" (p. 228).

RESPONSE OF WHEAT GROWERS TO PRICE CHANGES: APPROPRIATE OR PERVERSE?

I

SINCE the First World War and particularly since the Great Depression, many economists have sweepingly condemned the free-market mechanism as a means for effecting appropriate demand–supply adjustments for basic agricultural commodities like wheat, cotton and sugar. They have argued that producers and consumers of most of these products respond feebly—at times even "perversely"—to price changes. It has become popular to talk about backward-rising supply curves, backward-falling demand curves and the "perverse" effects of stocks operations of speculators.

This modern theme has been echoed by "practical economists" in national policy-making circles and in meetings of various international bodies, including the United Nations Economic and Social Council and the Food and Agriculture Organisation. Such economic discussion has played a primary role in calls for national and international intervention to fix or stabilise the prices of specific agricultural commodities. For example, in favouring the conclusion of a new International Wheat Agreement for 1953, the F.A.O. Secretariat and Mr. Nicholas Kaldor put great stress on the low supply and demand elasticities for wheat, going so far as to suggest that in some important producing areas where producers derive the bulk of their income from wheat the supply curves may well be "backward rising."[1]

These ideas about the behaviour of individual commodities go a long way beyond the much older concern about inflexibility of agricultural output over the trade cycle. The well-known tendency of agricultural output to fluctuate rather less, agricultural prices rather more, than manufacturing output and prices as the economy goes from boom to depression and back to boom again has evolved, by strange processes of speculative analysis, into the notion that the supply curves for various individual agricultural commodities have negative slopes.

Even the idea that the supply schedule for all farm products combined has negative slope must be seriously questioned. Its supporters usually reason from a Robinson Crusoe model in which variations in output are solely dependent on the efforts of one individual, who is continually balancing the marginal utility of money income against the marginal disutility of labour. Thus Mr. Kaldor and the F.A.O. Secretariat argue that "when prices go up, he [the typical producer] will be inclined to spend some part

[1] Food and Agriculture Organization, *A Reconsideration of the Economics of the International Wheat Agreement* (Commodity Policy Studies No. 1, Rome, September 1952), especially pp. 17–21. Although this study is supposed to be directly concerned with wheat, the writers deal so broadly with "primary commodities" and "agricultural products" that it is often difficult to tell whether a particular paragraph or particular concept is, or is not, supposed to apply to wheat.

of his increased real income on increased leisure." [1] Perhaps this is true, and in very primitive subsistence economies, if there indeed be such, it may lead to lower total output. That it does not do so, even in such backward countries as those of tropical Africa, is becoming abundantly clear. And that the model is not applicable in the more highly developed countries of the world—Western European nations, the United States, Canada and Australia—should be obvious. In countries such as these, farmers who wish to trade money for leisure can, and do, keep their land fully productive by:

(1) hiring more labour;
(2) using more labour-saving machinery;
(3) turning part of their land or farm operations over to sons or other relatives; or
(4) leasing part of their land to neighbouring farmers anxious to expand.

Just as a number of farmers die or retire every year without thereby affecting farm output, so a number can reduce their personal exertions without affecting it. Moreover, reduction in the output of an individual commodity need not mean a slackening in the pace of farming activities. Every farmer has a choice of uses for his land, even though some may yield much lower revenues than others. Alternative uses always exist, and if the revenue from current use falls low enough, he will turn to the best alternative use.

Indeed, if the situation were otherwise—if American or Canadian or British farmers, as a group, actually did respond to higher farm prices by cutting farm output and to lower prices by increasing output—we would have to conclude that the war-time economic measures taken by the United States and other countries to expand food production were all wrong. Yet the evidence clearly suggests that the higher real agricultural prices in the Second World War (including special acreage-payments in some countries) did, in fact, bring forth the hoped-for increases in production. And in the United States continued high price supports were largely responsible for the disturbing agricultural surpluses that exist to-day.

It is more difficult to present conclusive empirical evidence to refute the notion that farmers tend to expand, rather than to contract, production in response to sharply falling real prices in a major economic recession (allegedly reflecting efforts to compensate for the adverse income effects of the declining prices). On this point the statistical evidence is meagre, exceedingly complex and conflicting. On the one hand, much fiction attaches to the idea that all farmers were severely pinched by declining agricultural prices in the Great Depression. Although the international price of wheat declined sharply, and much more than wholesale commodity prices in general, the wheat prices received by farmers were well sustained by protective

[1] *A Reconsideration of the Economics of the International Wheat Agreement*, p. 19.

government measures in such important importing countries as Germany, France, Italy and the Netherlands, and, through supplementary "deficiency" payments, even in the United Kingdom. Indeed, it is possible to point to a sizeable number of countries in which the net real price of wheat to producers (including supplementary payments) was higher during most of the depression years than in the preceding decade. This is probably true also with respect to a number of other individual agricultural commodities, though perhaps nowhere with respect to all agricultural commodities combined.

Even if it could be demonstrated that farmers in the highly developed countries of Western Europe and North America have shown a consistent tendency to expand farm output in the face of declining real agricultural prices in the downward phase of the trade cycle, it would seem much more reasonable to attempt to explain this result not in terms of backward-rising supply curves, but in terms of shifts of forward-rising curves.

Under the greatly changed conditions of economic recession—sharply declining urban employment and purchasing power, narrowing market outlets and increasing reliance on government relief measures of varying degrees of inadequacy—the supply curves for many individual agricultural and industrial commodities and groups of commodities can be expected to shift position and even, in some instances, to alter, though not to reverse their slopes. Certainly there is a basic change in the relative attractiveness of farming *vs.* urban work, and of employment in the more stable industries with lower wage schedules (*e.g.*, flour-milling) *vs.* the more variable, higher-wage industries (*e.g.*, automobile manufacturing). With decline of urban employment, many urban members of farm families seek to return to the greater security of farm life; and many farmers attempt to economise by using more family labour as a partial substitute for hired labour, by repairing rather than replacing worn-out farm machinery, and by cutting purchases of yield-raising fertilisers, insecticides and the like. Thus, in an economic recession, very substantial changes are typically made in imputs of land, labour, and capital in agricultural production, some of the changes tending to increase, others to reduce, the total farm output. The net result is likely to be an increase in agricultural production in some countries—in any case, a lesser proportional reduction than in the corresponding national output of all industrial products combined. Yet there appears to be no reason for assuming that any of the changes are such as can appropriately be described by a backward-rising supply curve.

II

The icy fastnesses of the higher Himalayas are visited by few men. What may lie in this lofty world can be known only imperfectly by those of us who must keep our feet on ground much closer to sea-level. Nevertheless, when hardy explorers bring back reports of a man-like creature who lives at home on the icy peaks, and who runs across the eternal snows with his

bare feet pointed backwards, we do well to be sceptical.[1] Perhaps the "abominable snowman," often reported but never captured, actually exists. A footprint, a figure glimpsed dimly, a mysterious attack or equally mysterious rescue, may be the snowman's work—or again may be merely the product of the rarified air and the impersonal cold of high altitudes.

There are several abominable snowmen in economics, not least of which is the backward-rising supply curve. And when a specimen is brought forward for our examination, it is a matter of some importance. Just such a specimen has recently been described by Mr. G. R. Allen, who believes he has found it, not for an obscure product in an out-of-the-way corner of the world, but for one of the world's principal agricultural commodities, and in the heart of one of the major regions of its commercial production.

The assertion that the real price of a commodity has no influence on its supply, or that a price fall causes supply to rise, strikes at the heart of economic analysis as we know it. Some would go farther and say that if price is not the motivator we have thought it to be, then all our economic analysis is chimerical. It is of the greatest importance, therefore, to examine carefully any evidence that may be offered in support of this assertion.

Mr. Allen's discovery was the result of examination of the relationship between the price of wheat and wheat plantings in Saskatchewan Province from 1914 to 1939. He concluded that [2]

> "A change in the real price of wheat between one harvest and the next during the period 1914–39 resulted in an opposing short-term movement in wheat acreages. . . . As far as Saskatchewan farmers were concerned there undoubtedly existed a backward-sloping supply curve in the short run."

These conclusions are out of line with the "expert" opinions frequently expressed in leading North American and British grain-trade journals; and they appear to be at variance with the experience of the United States Commodity Credit Corporation. Moreover, contrary empirical findings have been reported by Mr. J. W. Clarke, who conducted a carefully planned, direct-interview survey in central Saskatchewan farm areas in 1950. According to Mr. Clarke,[3]

> "Sixty-three per cent of the farmers made conscious [appropriate] adjustments to price changes in both crop and livestock pro-

[1] Reports of the abominable snowman appear to date back at least to Pliny the Elder, cf. Lionel Pearson, "The Diary and the Letters of Alexander the Great," *Historia* (Wiesbaden, Germany), III, 1955, pp. 441–2.

[2] G. R. Allen, "Wheat Farmers and Falling Prices," *Farm Economist* (Agricultural Economics Research Institute, Oxford, 1954), Vol. VII, No. 8, pp. 338–9. In Mr. Allen's opinion only the *deviations* from the primary expected relationship (represented by the backward-sloping supply curve) "could largely be attributed to changes in expectations concerning the future profitability of wheat relatively to other field crops."

[3] J. W. Clarke, *Farm Practices in Central Saskatchewan* (mimeo., Regina, n.d.—1952?), p. 31. This study was sponsored by the Dominion Economics Division, Marketing Service, Canada Department of Agriculture, in co-operation with Department of Farm Management, University of Saskatchewan.

duction. However, 37 per cent did not make such adjustment and a bigger proportion of the farmers on small farms were in this category. Most of those farmers who made adjustments in production to price changes did so on the basis of the price of wheat."

In the present article we shall analyse the evidence underlying Mr. Allen's conclusion. We shall also present additional empirical evidence specifically designed to answer two broader questions:

(1) Did Western Canadian farmers, as a group, generally attempt to increase or reduce wheat production during 1910–39 in response to changes in the crop-year price of wheat?

(2) If Western Canadian farmers responded "appropriately" rather than "perversely," was the response of sufficient magnitude to make a useful contribution toward adjusting the supply of wheat to the indicated demand?

III

The area selected by Mr. Allen in which to search for the elusive backward-rising supply curve is not to be rejected as atypical or as little explored. Moreover, the period 1910–39 has much to commend it. The Canadian Government has long devoted special attention to wheat as the nation's primary cash crop; and during the first quarter of the present century Canadian officials showed more concern about the collection of satisfactory acreage and production data for wheat than they did for any other crop. Furthermore, Canada is one of the very few major wheat producers that reported estimates of sown (as contrasted with harvested) wheat acreage as early as 1910.

Much may also be said in favour of the several Canadian wheat-price series that might be used for such a study. Although these are not lacking in complexity or in need of adjustment, their interrelationships are fairly well understood. Furthermore, both the market prices and the officially estimated average farm prices of Canadian wheat have typically been more representative of the actual prices received by domestic producers than have the wheat-price series available for most other leading countries, primarily because the Canadian Government has rarely resorted to supplemental subsidies or direct wheat-marketing taxes. Finally, during 1910–39, the closely interrelated wheat prices recorded on the large, well-organised futures markets of Liverpool, Chicago and Winnipeg were widely published in North American newspapers and were carefully watched by many Canadian farmers. During and since the Second World War, on the other hand, the absence of similarly representative futures prices, the compulsory-pooling system for wheat in Western Canada (involving delayed payments difficult to forecast), the Wheat Board's differential export pricing of wheat and restrictive marketing quotas have made crop-year average prices received by producers less satisfactory guides for rational acreage adjustments.

The basic data selected for Mr. Allen's study thus appear to have been well chosen. His analysis involved the following steps:

(1) a long-term trend line was fitted " by eye " to the Saskatchewan wheat-acreage series from 1910 to 1950;

(2) the wheat area sown each year, 1916 to 1940, was expressed as a percentage deviation from the acreage trend line;

(3) the Saskatchewan average farm price of wheat for each crop year was deflated by a roughly corresponding annual index of prices of commodities and services used by Canadian farmers;

(4) the change in the deflated wheat price from one crop year to the next was expressed as a percentage of the deflated price in the earlier year; and

(5) the year-to-year change in the deflated wheat price (from step 4) was plotted against the deviation from trend of the wheat acreage sown for the following year (from step 2).

This analysis led Mr. Allen to conclude that the short-run supply curve for wheat in Saskatchewan was backward sloping. His basic scatter diagram (slightly modified) and " supply curve " are here reproduced in Chart 1A.

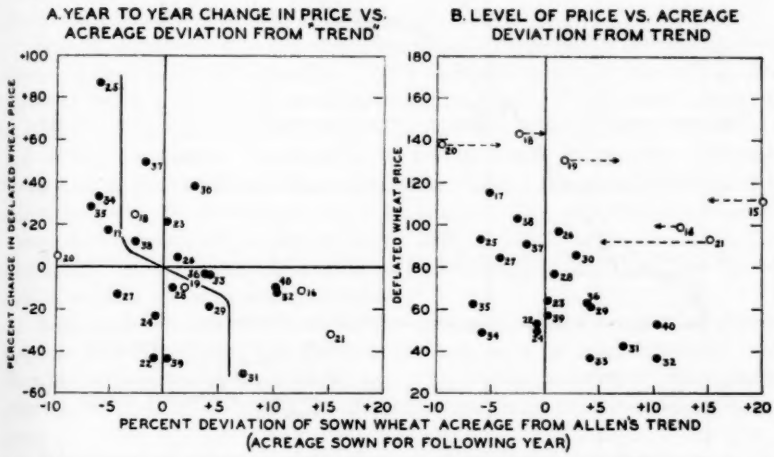
The most pertinent criticism to be directed against Mr. Allen's " backward-sloping supply curve " is that it is not an economic supply curve at all, combining, as it does, *levels* of acreage with year-to-year *changes* in price. Indeed, the price–acreage relationships plotted by Mr. Allen do not fit any recognisable economic model. His chart suggests that Saskatchewan wheat sowings tended to be large (above trend) when the average price of wheat had fallen in the preceding year (regardless of whether the price was high or low preceding or following the fall), and that wheat sowings tended to be small (below trend) in years following an advance in the crop-year average " real " price of wheat (whether the advance was from a level low to high, or from high to higher, or from extremely low to less low). Obviously, a curve that generalises these relationships does not meet the definitional requirement that an economic supply curve relate level of output to level of price.

Mr. Allen might more reasonably have compared either (1) the price of wheat in each crop year with the acreage sown to wheat for the following year's harvest, or (2) the change in the wheat price from one crop year to the next with the change in wheat sowings. It would not be unreasonable to express annual levels of wheat acreage as deviations from the underlying acreage trend if it were possible to determine that trend with a fair degree of accuracy. We suggest below reasons for believing this is impossible. Yet since Mr. Allen drew an acreage trend which he regarded as satisfactory, we show in Chart 1B the relationship between the level of Saskatchewan wheat prices (as deflated by Mr. Allen) and the level of Saskatchewan wheat sowings for the following year, with the latter represented by the percentage deviations from trend published by Mr. Allen. The scatter of the data suggests a very slight negative relationship.

Before proceeding further, it is desirable to examine the validity of Mr. Allen's acreage trend. Detailed study of the acreage statistics leads us to conclude that as the acreage under wheat rapidly expanded from 1910 to 1921, the annual official estimates of wheat sowings progresssively understated the increase between each five-year census report. For 1915 and 1916, for example, the official pre-census estimates were only 6·8 and 5·9 million acres, respectively, as contrasted with the corresponding census figures of 8·9 and 9·0 million acres (eventually accepted as official revisions). The

CHART 1

Relationships Between Deflated Crop-year Prices of Saskatchewan Wheat and Percentage Deviations from Mr. Allen's "Trend" of Saskatchewan Wheat Sowings [1]


A. YEAR TO YEAR CHANGE IN PRICE VS. ACREAGE DEVIATION FROM "TREND"
B. LEVEL OF PRICE VS. ACREAGE DEVIATION FROM TREND
PERCENT CHANGE IN DEFLATED WHEAT PRICE
DEFLATED WHEAT PRICE
PERCENT DEVIATION OF SOWN WHEAT ACREAGE FROM ALLEN'S TREND
(ACREAGE SOWN FOR FOLLOWING YEAR)

The numerals in the body of the chart refer to the years in which the wheat sowings took place. Thus, in Section A, point "16" shows the relationship between (1) the percentage change in the deflated wheat price between the two August–July crop years 1914/15 and 1915/16, and (2) the percentage deviation from "trend" of the wheat area sown in the late spring of 1916. The shifts indicated by arrows in Section B represent very rough adjustments made by the present writers to correct for the most striking incomparabilities in the official acreage series and the adverse influence of these incomparabilities on Mr. Allen's acreage trend (see text).

annual intercensal estimates of the Dominion Statistics office were too low, not only for 1915 and 1916, but only moderately less so for 1914 and decreasingly so for 1913 and 1912. Thus, the currently accepted official acreage estimates for 1914 and 1915 are seriously incomparable, one with the other, since the latter but not the former is tied to the much higher 1915 census base. This is clearly evident in the several acreage series shown in Chart 2.

Between 1915 and 1920 the Statistics Office was more successful with its intercensal estimates, primarily because of an improved method of estimation

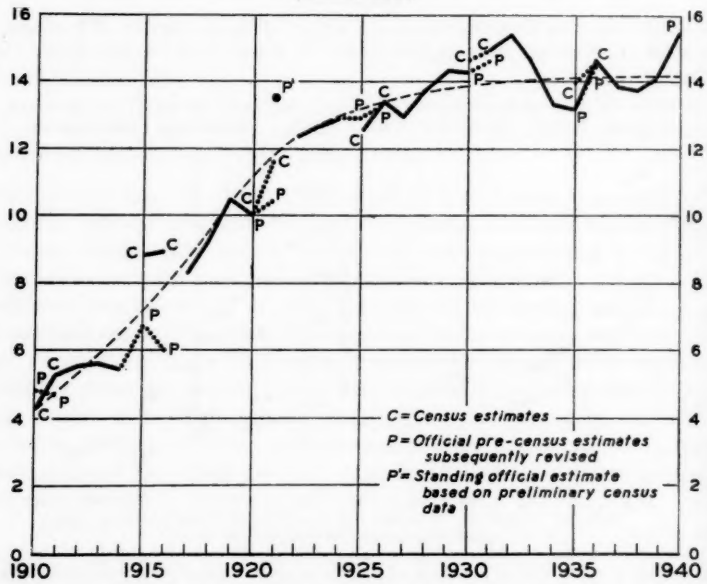
[1] Data from G. R. Allen, *Farm Economist* (Oxford), Vol. VII, No. 8, 1954, p. 340. Section A shows Mr. Allen's basic scatter diagram and "backward-sloping supply curve."

introduced in 1917—an improvement which, in turn, resulted in acreage estimates " not strictly comparable with those of 1916 and previous years." [1] In any case, the Dominion Bureau's pre-census wheat-acreage estimate for 1920 closely approximated the census figure subsequently released for that year. And had it not been for an unfortunate pre-census revision announced

CHART 2

Official Estimates of Saskatchewan Sown Wheat Acreage, 1910–40, *and Mr. Allen's Acreage Trend* [2]

(Million acres)



for 1921, the Bureau might well have been congratulated on its improved crop-reporting system of 1917–21. As of July 1921 the Bureau had reported

[1] *Monthly Bulletin of Agricultural Statistics* (Canada, Census and Statistics office), January 1918, p. 4. The incomparabilities in the acreage estimates before *vs.* after 1917 are much greater for other grains than for wheat. Saskatchewan wheat sowings undoubtedly declined between 1916 and 1917, primarily because an extraordinarily late spring " made it impossible for farmers to sow as much wheat as would otherwise have been put in . . . " (*ibid.*, p. 1).

[2] Points on the solid line (broken to indicate the incomparabilities in the series) and also the unconnected point *P'* represent the standing official estimates of the Dominion Bureau of Statistics (Canada, Dominion Bureau of Statistics, *Handbook of Agricultural Statistics, Part I, Field Crops*, D.B.S. Reference Paper No. 25, May 1951)—the acreage series used by Mr. Allen. Points designated *P* (from various issues of the Bureau's *Monthly Bulletin of Agricultural Statistics*, earlier entitled *Census and Statistics Monthly*) represent the last official estimates published before the census data became available for census years. Census estimates, designated *C* (Canada, *Census of the Prairie Provinces 1946, Vol. IV, Agriculture*, 1949), may be regarded as comparable at least within each successive pair of census years. Similarly, we assume that the Bureau's *pre-census* estimates for census years, *P*, may be regarded as fairly comparable within each pair of years and as more or less comparable with the estimates for the three preceding intercensal years.

Saskatchewan wheat sowings at only 10·4 million acres—just a little higher than the acreage of the preceding year. Four months later, however, this estimate was revised upward to 13·6 million acres on the basis of preliminary census returns on the number of farms in Saskatchewan. This notably high figure was not revised (as had been promised by the Dominion Bureau) when the final census estimate—11·7 million acres—became available.

Mr. Allen took the standing official wheat-acreage figures at face value (a dangerous practice in commodity analysis). His acreage-trend line therefore rises too rapidly between 1914 and 1921, resulting in excessive deviations above trend in 1915 and 1916 and excessive deviations below trend in 1918, 1919 and 1920. Moreover, because he used the inflated 1921 pre-census figure of 13·6 million acres, rather than the more reasonable final census estimate, his tabulated data and chart show an excessive plus deviation from trend for the 1921 sowings.

Rough adjustment of the acreage series for these major incomparabilities leaves as indicators of a possible " backward-rising supply curve " in Chart 1B little besides the wheat sowings in 1931–33 and 1940, when anticipation of higher future wheat prices and, in 1931–33, special government efforts to aid wheat producers contributed to heavy wheat plantings. Moreover, these four years would not lie so far to the right of the general scatter if Mr. Allen had put his trend line lower during 1917–27 and had continued the upward movement of the line through 1931 or 1932, as the course of " new breakings " and the upward shift in the acreage-estimation base in 1931 would suggest to be more appropriate.[1]

Although we feel confident of the direction of the several adjustments suggested in Chart 1B, the magnitudes can only be approximated. It is thus impossible to draw a realistic trend line—even a series of discontinuous, short-term trends—to apply to the defective Saskatchewan wheat-acreage data.

IV

If no satisfactory wheat-acreage trend(s) can be constructed, further discussion of Chart 1B is obviously unwarranted. Indeed, this would be true in any case, because the deflated price and acreage series shown there are essentially inappropriate for analysing the responses of Saskatchewan farmers to changing prices.

The purchasing power of wheat over the commodities and services used by Saskatchewan farmers (the deflated price in Chart 1) may serve as a rough index of the economic welfare of Saskatchewan producers,[2] but it is not the kind of " real " price of wheat required for constructing an economic supply curve. A much better measure is the ratio of the price of wheat

[1] Since new-broken land in Saskatchewan is normally planted to wheat the first year or two (sometimes longer) after breaking, the sown wheat acreage might be expected to reflect the changing two-year course of new breakings, with some lag.

[2] It is not even a good index of economic welfare when comparisons are made between years widely separated in time, since the real cost of producing and marketing Saskatchewan wheat has declined markedly and irregularly since the beginning of the present century.

to the prices of the chief farm products that compete with wheat for crop acreage.

Similarly, the absolute level of wheat sowings is not as good an index of farmers' intended responses to changing prices as is the ratio of wheat sowings to the area planted to the chief competing crops—in Saskatchewan, oats, barley, rye, mixed grains and flax-seed. In some years, it is true, lateness of spring weather or persistent spring rains have so delayed farm operations in Saskatchewan that farmers could not sow to wheat the full area they had planned; they therefore left more land than intended in summer fallow or planted more land to later-sown oats and barley. Nevertheless, the ratio of wheat sowings to sowings of competing grains and flax-seed may be regarded as a reasonably satisfactory index of the basic planting intentions of Saskatchewan farmers over a period of years.[1]

Chart 3 shows for each crop year during 1910–39: (1) the average farm price of Saskatchewan wheat deflated by an index of the price of the five chief competing crops; [2] (2) the ratio of the per-acre value of the Saskatchewan wheat crop to the per-acre value of the chief competing crops; and (3) the ratio of the Saskatchewan wheat acreage to the area sown to the five competing crops. The value-per-acre ratios are included because of the belief of many economists that farmers more frequently plan crop sowings in response to past-season returns per acre from their various crops than to past-season price relationships among those crops.[3]

All three of the curves in Chart 3 show upward trends in the early part of the period covered. Since many of the defects of the basic acreage series remain in the acreage ratios, and since no good basis exists for determining appropriate trend values for the three series, direct comparison between the annual figures or between their deviations from trend is unwarranted.

The best approach appears to be to compare year-to-year changes in the relative price (or value per acre) of wheat with year-to-year changes in the relative acreage sown to wheat for the following crop year. This makes it possible to utilise the acreage ratios with greater confidence, since incomparabilities in the series are minimised in comparisons between successive years.[4]

[1] Although producers in some countries may respond to changing prices by varying inputs of capital or labour rather than, or in addition to, the acreage planted, sown acreage may be regarded as a generally satisfactory measure of farmers' responses to price changes under the particular conditions that exist in Western Canada. And since all major crops are spring sown in that region, one does not face the further possible problem of dealing with resowings of abandoned autumn-sown acreage.

[2] In construction of the index, the crop-year average farm price of each crop was weighted by its average annual production in 1935–39 and expressed as a percentage of the average price so computed for the five crop years from 1935/36 through 1939/40.

[3] For example, see Wilfred Malenbaum, *The World Wheat Economy, 1885–1939* (Cambridge, Mass., Harvard University Press, 1953), p. 26.

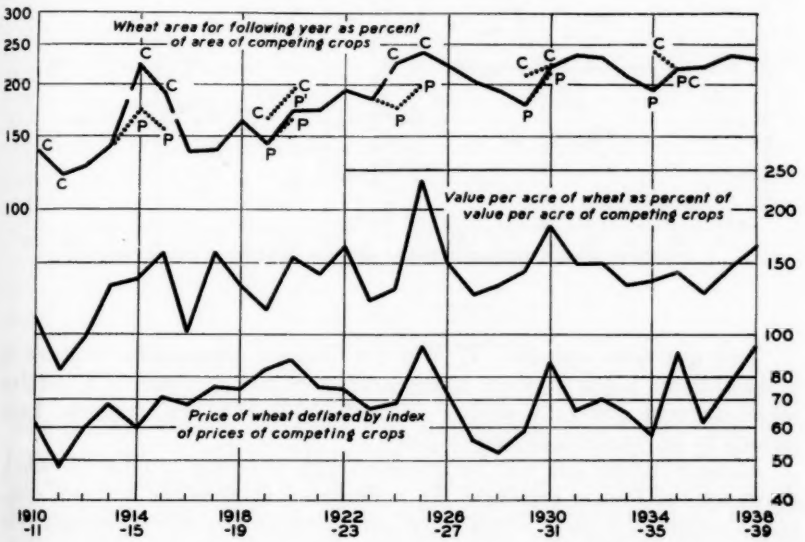
[4] There is the difficulty that disregard of longer-term movements may remove part of the statistical relationship that one desires to study. This is apparently true in some degree with respect to the relationships here considered, but the defects of the basic acreage data leave no alternative.

Chart 4 clearly suggests that Saskatchewan farmers tended to expand their sowings of wheat relative to sowings of other grains and flax-seed following crop years in which the average farm price of wheat (or its value per acre) rose in relation to the weighted average price of these competing crops (or their aggregate per-acre value). And conversely, Saskatchewan

CHART 3

Relative Wheat Prices and Value-per-acre Ratios Compared with Saskatchewan Acreage Ratios, 1910/11–1938/39 [1]

(Logarithmic vertical scale)



farmers typically reduced the proportion of their acreage sown to wheat at the end of crop years in which the price or value per acre of wheat declined in relation to the corresponding weighted price or per-acre value of the five competing crops.

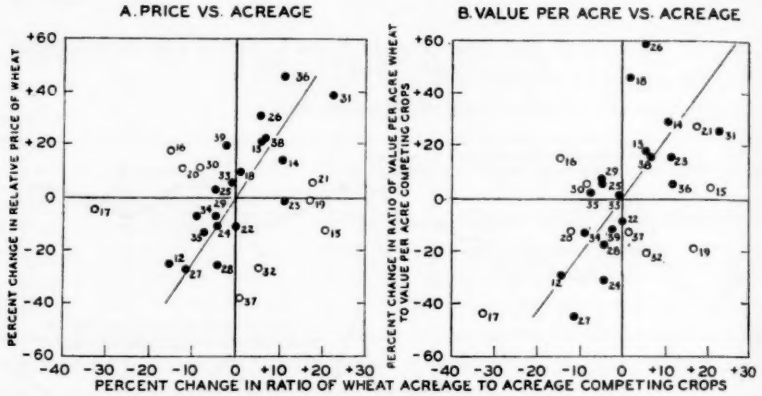
This general statistical indication of a positive-sloping supply curve for wheat—appropriate, not perverse, acreage responses to price changes—is further supported by examination of the apparently abnormal acreage shifts recorded for the nine years represented by hollow circles in Chart 4. In each instance the peculiar response can be attributed to faulty statistics

[1] Based mainly on data from *Handbook of Agricultural Statistics, Part I*, and *Census of the Prairie Provinces 1946*. See Chart 2 for explanation of *C*, *P* and *P'* symbols and also for the basic wheat-acreage estimates here expressed as percentages of the areas sown to competing crops.

or to external factors in the form of unusual weather, war developments, or expected or actual government policy decisions (see Appendix).

CHART 4

Comparisons of Year-to-year Changes in (A) *Relative Wheat Prices and Acreage Ratios, and* (B) *Value-per-acre Ratios and Acreage Ratios, Saskatchewan,* 1910–39 [1]


A. PRICE VS. ACREAGE
B. VALUE PER ACRE VS. ACREAGE
PERCENT CHANGE IN RELATIVE PRICE OF WHEAT
PERCENT CHANGE IN RATIO OF VALUE PER ACRE WHEAT TO VALUE PER ACRE COMPETING CROPS
+60
+40
+20
0
-20
-40
-60
-40 -30 -20 -10 0 +10 +20 +30
PERCENT CHANGE IN RATIO OF WHEAT ACREAGE TO ACREAGE COMPETING CROPS

V

Two questions remain: (1) Was the positive production response of Saskatchewan wheat farmers representative of the response of Canadian wheat farmers generally during 1910–39? (2) Was the response large enough to be economically significant?

These questions can well be discussed with reference to Chart 5, which shows for the Prairie Provinces the same basic relationships between crop-year changes in relative wheat prices and proportional wheat sowings that are shown for Saskatchewan alone in Chart 4A. Since almost 95% of the Canadian wheat crop was produced in the Prairie Provinces during the

[1] Year-to-year changes in the three basic series shown in Chart 3, with each change here expressed as a percentage of the two-year average for the particular series and pair of years specified. To promote comparability, pre-census official acreage estimates (*P*) are here used for 1915 and 1925 in comparisons between 1914 and 1915 and between 1924 and 1925, respectively, whereas census figures (*C*) are used for the acreage comparisons between 1915 and 1916 and between 1925 and 1926, respectively. For 1931/32 both the relative price and the value per acre of wheat were adjusted to take account of the wheat-transportation subsidy paid that year.

Each numeral in the body of the chart refers to the later of the pair of years compared. Thus, in Section A, the point marked "16" shows the relationship between (1) the change from 1914/15 to 1915/16 in the relative farm price of Saskatchewan wheat expressed as a percentage of the two-year average relative wheat price for 1914/15 and 1915/16 and (2) the change from 1915 to 1916 in the wheat-acreage ratio expressed as a percentage of the two-year average acreage ratio for 1915 and 1916.

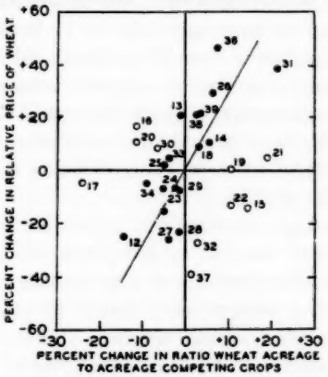
The indicated lines of relationship are rough "judgment lines" that partially discount the abnormal acreage-ratio changes represented by hollow circles.

inter-war period, the data for those provinces may be accepted as representative of Canada as a whole.

Comparison of Charts 4A and 5 discloses that most of the individual points occupy similar positions in the two charts,[1] resulting in similar diagrammatic scatters. Our "judgment lines" of general relationship accordingly suggest roughly the same relative price-elasticity of wheat supply in the three Prairie Provinces combined as in the single province of Saskatchewan.

CHART 5

Relationship Between Year-to-year Changes in Relative Wheat Prices and Subsequent Changes in Acreage Ratios, Prairie Provinces, 1910–39 [2]



In neither chart does it appear that acreage adjustments in response to price changes were truly large. On at least two counts this might have been expected. Until 1932 land was coming under the plough at a rapid rate in the Prairie Provinces, with the result that land settlement and technological factors were probably more important determinants of production plans than in older farming areas. Furthermore, the range of crop alternatives is much more limited in Western Canada than in regions with longer growing seasons and higher rainfall, such as, for example, the Corn Belt of the United States.[3] Thus, the climatic conditions of the Prairie Provinces tend to make wheat the most profitable crop to many producers within a fairly wide relative price range.

[1] Only for the points designated "22" and "23" are the positions notably different. This difference reflects (1) the abnormally large proportion (40%) of the Alberta oat acreage cut for green fodder in 1922, and (2) the introduction in Alberta in 1922 and in Saskatchewan in 1923, of a new basis of estimating the oat acreage—a change that involved a shift from estimation of the total sown area to estimation of the sown area on which the oats were allowed to mature for grain. *Monthly Bulletin of Agricultural Statistics*, January 1922, pp. 26–7; January 1923, pp. 25–6; June 1923, pp. 216–17; November 1923, pp. 434–5; January 1924, p. 28.

[2] See footnote to Chart 4, which shows comparable data for Saskatchewan.

[3] For a discussion of wheat-acreage changes in different regions of the United States, see A. E. Taylor, "The Contractibility of Wheat Acreage in the United States," *Wheat Studies of the Food Research Institute* (Stanford University, California), February 1930, VI, pp. 151–87.

Nevertheless, numerous wheat-acreage adjustments obviously took place in Western Canada in response to changes in relative wheat prices during 1910–39. The question is whether the magnitude of such adjustments was economically significant.

Of the relative wheat-price changes shown in Chart 5, over a third exceeded 20%, another third amounted to less than 10% and a fourth were of intermediate magnitude, ranging between 10 and 20%. A 20% change can therefore be rated as relatively large, though well within the normal range. The "judgment" line of general relationship in Chart 5 suggests that a year-to-year change of 20% in the relative price of wheat tended to be associated with a corresponding change of about 7% in the wheat-sowings ratio for the following harvest. A 7% change in wheat sowings is by no means insignificant. At the long-time average yield of 17 bushels per acre, it would mean an increase or decrease of over 25 million bushels in the wheat harvest —10–12% of the Dominion's average annual wheat exports. Such an increase in Canada's annual exportable supplies would have been most welcome in the post-war food-shortage period, and a corresponding decrease would represent an appreciable, if modest, contribution to solution of the existing Canadian wheat-surplus problem.

The basic price–acreage relationships indicated in Charts 4 and 5 should not be taken to represent the full wheat-production (or acreage) response made by Western Canadian farmers to the complex, changing price incentives of 1910–39. Other interrelated forms of price–cost incentives also influenced Prairie Province wheat sowings during that period. Among these might be mentioned: (1) the absolute level of wheat prices; (2) the price trends for wheat and competing grains during the nine months or so preceding planting; (2) the price relationships among new-crop grain futures on the Winnipeg market during March–May; and (4) differential changes over time in the costs of production of wheat *vs.* competing crops. Moreover, many Canadian producers may have made greater changes in their rotational patterns in response to price-relationship changes that persisted longer than a single year. Some suggestion of delayed and persisting acreage shifts (particularly following two or more years of persistently low or declining relative wheat prices) is evident in Chart 3.

In view of the serious incomparabilities in the Canadian acreage figures and the less serious limitations of the price data,[1] empirical investigation of such supplementary price–acreage relationships appears to hold little promise. The attempts we have made in this direction have not been encouraging. Indeed, it is probably impossible to obtain a satisfactory aggregate net measure of the acreage responses of Western Canadian wheat growers to the various forms of price incentives which influenced planting decisions during 1910–39. The price–acreage relationship represented in Charts 4 and 5, however, would almost certainly show up as the dominant element in such an aggregate measure, and the additional net influence

[1] The official farm-price estimates, available only on a crop-year basis, reflect crop-quality changes as well as price changes.

attributable to other income factors would probably not alter the conclusions we are prepared to advance on the basis of the limited empirical analysis presented above.

VI

The conclusions may be briefly summarised.

(1) The abominable snowman presented by Mr. Allen proves on close inspection to be just as illusory as all the preceding members of its genus. It is not the specimen he thought it to be, but is instead the economist's familiar and useful forward-rising supply curve.

(2) Western Canadian farmers, as a group, adjusted their plantings of wheat appropriately to year-to-year changes in the price of wheat relative to the prices of competing crops. Responses to two-year average price relationships may have been even more significant, but this cannot be satisfactorily tested because of the serious incomparabilities in the acreage data.

(3) Although the proportional wheat-acreage shifts were small to moderate, and broadly in line with the view that the price-elasticity of supply of Western Canadian wheat is low, the shifts were nevertheless large enough to result in substantial adjustments in exportable grain supplies.

(4) Increases in the absolute and proportional wheat sowings in the Prairie Provinces in 1931 and 1932—increases referred to as " perverse responses " by some economists who have looked only at the distressingly low wheat prices in those years—resulted from (*a*) continued population settlement and expansion of cultivated land in that region, and (*b*) *positive* responses of farmers to prices and values per acre that were relatively higher for wheat than for the chief competing crops. Moreover, in both 1931 and 1932 Western Canadian farmers had reason to believe that any governmental aid forthcoming would continue to be in the form of measures designed to support or supplement the market price of wheat, and wheat alone.

(5) If farmers in Western Canada typically make appropriate and significant acreage adjustments in response to changing crop-year price relationships between wheat and competing crops, it seems safe to infer (pending further empirical studies) that experienced grain-market analysts are correct in believing that large groups of commercial producers in virtually all major wheat-producing countries make significant *marginal* adjustments in their crop plantings on the basis of past and expected future price relationships. In many countries where the climatic conditions are more favourable and the competing crops more numerous than in Western Canada, wheat-acreage shifts are likely to be proportionally greater in response to given changes in price relationship. These inferences warrant not only further empirical investigation, but also careful consideration by those economists and governmental policy-makers who have recently been preoccupied with the desirability of stabilising wheat prices (independently of other prices) at national and international levels. Such stabilisation holds the threat of interfering with price changes that would encourage desirable

acreage adjustments in a large number of countries and, no less important, appropriate expansion or contraction of the food-feed demand for wheat.

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APPENDIX

The " perverse " wheat plantings in the years represented by hollow circles in Chart 4 were largely due to the particular factors described below.

In 1915 Saskatchewan wheat plantings expanded sharply, and to an unusually high level, in response to war-time appeals for increased sowings, rapidly rising wheat prices and ideal weather for both fall ploughing (in 1914) and spring seeding.[1] Even if equally favourable price and weather conditions had prevailed the following year, some compensatory contraction might have been expected in the 1916 wheat acreage—at least enough to compensate for the extensive 1915 plantings on land that normally would have been summer-fallowed.[2] Such normal contraction was reinforced in 1916 by a late spring that delayed seeding and resulted in increased sowings of competing coarse grains that could safely be sown later than wheat. In 1917 and 1920, also, the situation again " was notable for the backwardness of the spring . . . which made it impossible for farmers to sow as much wheat as would otherwise have been put in." [3] Indeed by April 30, only 5% of the " intended " wheat sowings had been planted in 1917 and only 4% in 1920 (two of the lowest figures on record), as contrasted with 94% under the favourable weather conditions of 1915. Still more important in accounting for the extraordinarily sharp reduction in the wheat-acreage ratio for 1917, however, was the " improved " method of acreage estimation then introduced, which greatly exaggerated the true increase in sowings of coarse grains between 1916 and 1917.[4]

Anticipation of lower future wheat prices apparently contributed heavily to the abnormal reductions in the proportional wheat sowings of 1920, 1930 and 1939. In the spring of 1920 Western Canadian farmers undoubtedly under-estimated the high supplementary payments that they were eventually to receive from the Canadian Wheat Board on their pooled 1919-crop deliveries and since they then knew that there would be no government-guaranteed wheat price for the the 1920 crop, many presumably expanded their sowings of coarse grains in response to the existing high free-market prices for barley and oats. Again in 1930, Canadian farmers were discouraged about the future price outlook for wheat, this time as a result of deepening concern about the continued downward course of prices, the persisting superabundance of wheat and the widely publicised financial difficulties of the Canadian Wheat Pool.[5] Only moderately

[1] *Census and Statistics Monthly* (later *Monthly Bulletin of Agricultural Statistics*), various issues, including November 1914, May 1915 and January 1916; and C. P. Wright and J. S. Davis, " Canada as a Producer and Exporter of Wheat," *Wheat Studies of the Food Research Institute* (Stanford University, California), July 1925, I, No. 8, pp. 242–5.

[2] *Census and Statistics Monthly*, November 1915, p. 279.

[3] *Monthly Bulletin of Agricultural Statistics*, January 1918, p. 1. This quotation refers specifically to sowings for the 1917 crop, but similar statements were made by the same Office with regard to 1920 sowings (*ibid.*, May 1920 and November 1921).

[4] *Ibid.*, January 1918, p. 4.

[5] Canada, *Report of the Royal Grain Inquiry Commission*, 1938, pp. 35, 76–8.

less striking was the situation in the spring of 1939, when Western Canadian farmers faced the prospect that the minimum guaranteed wheat price of the Canadian Wheat Board would be materially reduced for the 1939 crop and that deliveries at the guaranteed price were likely to be restricted.

In contrast, anticipation of future price support from protective government wheat programmes was apparently largely responsible for the abnormally increased wheat-acreage ratios of 1919 and 1932. In 1919, when there was widespread expectation that world grain prices would decline sharply from their high war-time levels, Canadian farmers had reason to hope that they could induce the Canadian Government to continue for another year its war-time monopoly purchasing of wheat at high fixed prices, thus favouring wheat relative to other grains.[1] Similarly, in 1932, when agricultural prices were disastrously low, Canadian farmers had reason to believe that the Government would give special protection to wheat by continuing to finance " wheat-stabilisation operations," by furthering wheat exports through negotiations at the 1932 Ottawa Conference and perhaps by renewing the wheat-transportation subsidy paid to growers in 1931/32.[2]

Finally, the " excessive " wheat-acreage expansion of 1921 primarily reflected readjustment from the abnormal contraction of wheat sowings in 1920, accentuated by incomparabilities in the acreage data; while the slight increase (instead of appropriate reduction) in the proportional wheat acreage of 1927 was apparently closely associated with the 1936 drought, which resulted in record summer-fallowing of land and shortage of seed oats and barley for the following year.[3] In 1937, relatively heavy early sowings of wheat were facilitated not only by the large area of summer-fallowed land that was ready for planting, but also by favourable early spring weather; later in the spring persistent sectional drought curtailed plantings of the later-sown feed grains.

[1] D. A. MacGibbon, *The Canadian Grain Trade* (Toronto, 1932), pp. 60–4.

[2] *Report of the Royal Grain Inquiry Commission*, 1938, pp. 36, 94–100; W. Sanford Evans, "Canadian Wheat Stabilization Operations," *Wheat Studies*, March 1936, XII, No. 7, especially pp. 259 ff.; D. A. MacGibbon, *The Canadian Grain Trade*, 1931–1951 (Toronto, 1952), pp. 17–25.

[3] *Monthly Bulletin of Agricultural Statistics*, March 1937, pp. 94–5; May 1937, pp. 130–4; January 1938, p. 2; W. Sanford Evans and Co., *Field Crop Acreage: Manitoba, Saskatchewan, Alberta, Prairie Provinces*, 1913–1945, Winnipeg, April 1946.

BENTHAM AS AN ECONOMIST[1]

I

In the spring of 1941, at the original suggestion of J. M. Keynes, the Royal Economic Society commissioned Dr. Stark to prepare a comprehensive edition of Bentham's economic writings. Dr. Stark's task did not include the tracking down of long-vanished documents as had that of Ricardo's editor, but rather lay primarily in deciphering, sorting, selecting from and piecing together the masses of manuscript material at University College, the British Museum and Geneva. These vast heaps of papers were only legible with great difficulty, and were shuffled about in a state of complete confusion, which such pagination as Bentham had provided only aggravated rather than alleviated. Everyone interested in the history of economic thought, and in Bentham in particular, is very deeply indebted to Dr. Stark for the devotion and skill with which he has produced these three volumes and for the great interest and illumination they afford.

Dr. Stark's problems have inevitably, in the nature of the case, been those of continual selection and arrangement. The more or less insoluble problems of selection were on two fronts: that of selecting "economic" from "non-economic" writings—necessitated by modern specialism—and that of selecting those worth including from the masses of notes and fragments. Since, almost by definition, a "scholar" is one who never trusts, if he can possibly help it, any other selection or arrangement than his own, one might run the risk of appearing "unscholarly" unless, at least formally, certain reservations were expressed. (Not that we wish to press such reservations, because Dr. Stark has the obvious and valid reply that if one does not like *his* selection and arrangement, then one can go and bury oneself in the Bentham manuscripts for ten years, as he did, and produce one's own.)

However, unexhausted by the myriad problems of selection and arrangement posed by the manuscripts, Dr. Stark went on to select and arrange for this edition two anthologies, at the start of Vol. I and at the end of Vol. III, of passages from Bentham's already published non-economic writings, designed to illustrate or unfold his conception first of the Philosophy of Economic Science and, at the end, of the Psychology of Economic Man. But helpful and instructive though these passages are—extending from single sentences to several pages—one would like to feel certain that their inclusion has not taken up space which might have gone to material of interest to

[1] *Jeremy Bentham's Economic Writings. Critical edition based on his printed works and unprinted manuscripts*, by W. Stark, in three volumes (London: Allen & Unwin. Vol. I, 1952, pp. 412, 30*s*.; Vol. II, 1952, pp. 458, 40*s*.; Vol. III, 1954, pp. 600, 45*s*. Obtainable by Fellows of the Royal Economic Society at the following special prices: Vol. I, 20*s*.; Vol. II, 27*s*.; Vol. III, 30*s*.; application, including remittance, should be made to the Secretary, The Royal Economic Society, The Marshall Library, Downing Street, Cambridge.) Physically, these volumes, in particular in the spacing and margins, are in marked contrast with the Ricardo edition, and provide a not entirely welcome reminder of the austere years in which they were conceived.

economists still unpublished. Perhaps one *should* feel certain about this, in view of the extreme care and competence of Dr. Stark's work. Nevertheless, there is in fact the example of an extremely interesting fragment on the moral calculus, published for the first time in 1952, which would certainly have been a most suitable and valuable item for this edition.[1] We trust that this is an isolated example. Dr. Stark informs us that before the publication of this edition only " at best the tenth part " of Bentham's economic writings had been available in print (I, p. 11). It is difficult to estimate the percentages of new and previously published material in these three volumes, since some of the texts have been re-arranged or expanded as compared with the versions already available. But it does not seem that very much more than a half, or two-thirds at the most, can be new, and therefore very large quantities of Bentham's economic writings must still remain in manuscript, being presumably too repetitive, fragmentary or incoherent to do anything with.

The great services which these volumes afford might be briefly described as follows. First, they enable us to consider for the first time Bentham's contribution to political economy, which though it certainly does not take the form of a carefully finished, well-rounded achievement, easy to weigh up, is nevertheless chock-full of powerful, fertile and independent ideas on some of the perennial and fundamental problems of economic analysis and policy. At least some of the misconceptions about Bentham's standing as a political economist ought now to be removed (at any rate, for example, the statement Keynes once made that Bentham " was not an economist at all ").[2] More particularly, these volumes put before us in all their profusion and variety Bentham's ideas on the theory of money, investment and employment,[3] and they tell a deeply interesting story of the development and the fundamental changes in his ideas on this subject. Bentham devoted about eighteen years to politcal economy (*c.* 1786–1804), and in that time moved from a thorough-going acceptance of the " classical " Smithian doctrines on saving and investing and their implications for policy to what amounts to a thorough-going rejection. After 1804 he never actively returned to the subject or showed much interest in the great new developments of the Ricardo era, except for a very minor pamphlet in 1821. This story provides us with another of those ironies in the history of economic thought—all the more ironical in this case in view of the tremendous fame and influence of our author—where good original ideas, fundamentally acceptable to most economists of a subsequent period, were left buried and suppressed while the stage was dominated by doctrines now mainly and fundamentally rejected.

These volumes add little or nothing to the analysis of utility and diminish-

[1] See Appendix IV of D. Baumgardt's *Bentham and the Ethics of Today*, 1952, pp. 554–66. It might, on the other hand, have been useful and relevant to have included the *Tracts on Poor Laws and Pauper Management* printed in Vol. VIII of Bowring's edition, which contain, among other things, an interesting criticism of minimum-wage legislation, and also *Emancipate Your Colonies*.

[2] *The End of Laissez-faire*, p. 21.

[3] The importance of Bentham as a monetary theorist had been suggested by F. A. Hayek in his " Note on the Development of the Doctrine of Forced Saving," *Quarterly Journal of Economics*, 1932, pp. 123–33. See also J. Viner, *Studies in the Theory of International Trade*, p. 188.

ing utility available in Bentham's already published writings. It has often been pointed out, obviously with much truth, that Bentham's development of, and emphasis on, the two concepts of maximisation and utility make him above all the ancestor of neo-classical economic theorising, and especially of Jevons and Edgeworth. But these ideas were developed in Bentham's political, legal and philosophical writings. As an *economist*, as to-day defined, Bentham made no attempt to develop an economic calculus or a theory of relative values and prices. His economic theorising, in fact, is of an exactly opposite pattern to that typical of the neo-classicals. It is *not* mainly abstract, deductive and "micro-economic," tighly organised around the assumption of a maximising individual; but on the contrary, is rather practical, "macro-economic," concerned with aggregate monetary problems, and if not statistical, at any rate concerned to exploit such crude statistics as were available, while being ready for and calling for more.[1]

Finally, these volumes make it possible to reassess, as seems rather badly needed, Bentham's theory of economic policy, or his views on the role of the state in economic life. Our next three sections will refer briefly to some comments of Bentham on utility and value, will go on to tell in more detail of the development of some of his ideas on money, investment and employment, and will then discuss his doctrines on the role of the state.

II

As we have said, these volumes add very little that is new on the felicific calculus or the analysis of utility, to which Bentham had made such original contributions, mainly in his already published non-economic writings. Nor does Bentham attempt a systematic analysis of value and price. The most important new passage on this subject in these volumes takes the form of an interesting criticism of Adam Smith's treatment of utility. This comes in *The True Alarm* (1801), the opening sections of which are the nearest we get in Bentham's writings to a systematic account of economic principles. After emphasising that "all value is founded on utility . . . where there is no use, there cannot be any value" (III, p. 83), Bentham goes on to Smith's distinction between value in use and value in exchange, complaining that Smith "has not attached to it clear conceptions." Bentham is referring, of course, to the famous fatal sentences in *The Wealth of Nations*, almost the only ones throughout the book where value in use or utility gets any explicit mention, where Smith says, quite definitely, that value in use is in no way necessary for value in exchange, and vice versa, and that the

[1] M. P. Mack in a recent study refers to Bentham "spending at least 10 years of futile effort trying to ferret out correct statistics for the gross national income, tax revenues, agricultural production, etc." See "The Fabians and Utilitarianism," *Journal of the History of Ideas*, January 1955, p. 82. Bentham showed much interest in and reliance on the contemporary attempts at Political Arithmetic of Dr. Henry Beeke, who, in his *Observations on the Produce of the Income Tax* (1800), attempted to estimate the national income. Bentham also refers to the pioneer attempt at a price index-number of Sir George Evelyn Shuckburgh (1798). One may guess that Bentham was far more interested in this practical statistical attempt to measure changes in the value of money than in some of the near-metaphysical arguments over labour as a measure of value.

two are in fact " frequently " quite separate. Bentham criticises Smith not for the distinction itself but for the way in which he formulates it, and for illustrating it by the paradox of water and diamonds. Bentham himself resolves this paradox on lines which clearly point in the direction of the marginal utility theory, that is, by invoking the plenty or scarcity of the supply, though he does not, of course, actually introduce the marginal concept:

> " *Water* is the example he has chosen of that sort of article which has great value with a view to use but none with a view to exchange. In order to realize how erroneous the latter assertion is, he would only have had to consult in London the New River Board, and to remember that at Paris he had seen it sold retail by those who carry it into the houses.
>
> " He gives *diamonds* as an example of that sort of article which has great value with a view to exchange and none with a view to use. This example is as ill chosen as the other. . . . The value of diamonds is . . . a value in use. . . .
>
> " The reason why water is found not to have any value with a view to exchange is that it is equally devoid of value with a view to use. If the whole quantity required is available, the surplus has no kind of value. It would be the same in the case of wine, grain, and everything else. Water, furnished as it is by nature without any human exertion, is more likely to be found in that abundance which renders it superfluous: but there are many circumstances in which it has a value in exchange superior to that of wine " (III, pp. 87–8).

It is clear that if Bentham had ever got down to formulating precisely a general theory of value his approach would have differed fundamentally from the " classical " analysis of Smith and Ricardo. He would have continued in the tradition of Galiani, Pufendorf and the Schoolmen.[1]

III

Bentham's economic writings deal mainly with macro-economic questions arising, in several cases, out of topical issues of war finance and inflation, or

[1] On the subject of the water and diamonds paradox, which had, of course, been satisfactorily resolved by a number of writers before Smith (*e.g.*, Davanzatti, Law and Galiani), Schumpeter writes of " the astounding fact that Smith and Ricardo thought that this alleged paradox barred the way to a theory of value based on value in use " and refers to Smith " thereby barring, for the next two or three generations, the door so auspiciously opened by his French and Italian predecessors " (*History of Economic Analysis*, pp. 300 and 309). Bentham's remarks, if they had had any influence, might have helped to re-open this door. Ricardo, however, when he read this criticism of Smith by Bentham, noted emphatically in favour of Smith (cf. his comments in *Works*, ed. Sraffa, Vol. III, p. 284).

Incidentally, Schumpeter's " astounding fact " becomes all the more astounding when one recalls that Smith's main general statement in the *Wealth of Nations* on utility and value, at any rate at some points, directly contradicts his own statements as reported in the Lecture Notes of 1763 on the relations of " use," demand and value, and also the indications given in the Lecture Notes of the way in which the water and diamonds paradox is to be resolved in terms of scarcities (*v. Lectures*, ed. Cannan, pp. 157 and 176–7). Smith's famous statement in the Wealth of Nations also contrasts at some critical points with the treatments of utility, scarcity and value by his predecessors at Glasgow, Hutcheson and Carmichael (who has a very acute note on the subject). I am indebted on this question to an unpublished essay by Mr. W. L. Taylor.

" how to pay for the war," and his theoretical analysis is centred around questions of capital, saving, investment, money and employment. His starting point was that of a thorough-going, but even then by no means uncritical, disciple of Adam Smith. He accepted, to start with, the Turgot–Smith analysis of saving and investment [1] (the cornerstone of " classical " economics in the Keynesian sense) and, what went logically with it, the unqualified approval of " parsimony " and saving, and what came to be the Ricardo–Treasury view of the uselessness and waste of public works and public investment. On the other hand, in his later economic writings we find Bentham completely and fundamentally rejecting this self-same set of ideas, putting his finger very precisely on the limitations in its assumptions and applicability, and advocating in consequence completely different policies and a very different attitude to the role of the state in economic life. The trend of Bentham's thinking on these subjects is perfectly clear, though in writings that are often unfinished and dashed off in a completely unrevised note form, there are numerous deviations and inconsistencies around the trend.[2] If he had devoted a certain amount of time and patience to the task of working his ideas up into a finished, balanced treatise, or if he had found some understanding disciple to help him in this task—instead of Dumont, Mill and Ricardo—it is clear that Bentham could have produced a work as outstanding as Thornton's *Paper Credit*.

Bentham's first economic work, the well-known *Defence of Usury*, is primarily a policy pamphlet containing little in the way of theoretical analysis. Though devoted to criticising Smith from a more-Smithian-than-Smith point of view, it is entirely under the influence of Smith. We have now an hitherto unpublished postscript to the *Defence* which shows how his theoretical interests were developing. Here Bentham gives us a restatement of the Turgot–Smith theory of saving and investing and draws from it the logical implication that voluntary " parsimony " or saving always must result in, and is unconditionally necessary for, capital accumulation. He writes: " Whoever saves money, as the phrase is, adds proportionately to the general

[1] On the Turgot–Smith analysis of saving and investment, on the sharp break it marks with preceding doctrines and on its dominating influence right down into the twentieth century, see Schumpeter, *History of Economic Analysis*, in particular pp. 191–3 and 282–8. This theory of saving and investment (rather than what is called " Say's Law ") might well be considered the cornerstone of " classical " economics in the Keynesian sense. And, in emphasising the immense influence and wide unquestioned acceptance of the theory in orthodox circles for 150 years, Schumpeter can be said to be offering considerable confirmation of Keynes' generalisation about the history of economic thought.

[2] We must regard as outside the trend of Bentham's thought, as set out in these volumes, such passages as are to be found in his early letters expounding the desirability of public works for the relief of unemployment (1776), and suggesting that with a suitable monetary and investment policy " those commercial distresses which beget distrust and produce ruin to many respectable individuals, while they distrust the beneficial intercourse of commerce *could rarely happen* " (1779, Bentham's italics). See *Works*, ed. Bowring, Vol. X, pp. 85 and 338–9. The throwing out of these ideas could be regarded as a significant foretaste of Bentham's later position, but they come a decade before he began to devote himself regularly to political economy, before he had temporarily adopted the Smithian analysis of saving, investment and capital, and, of course, before any of the writings included in this edition.

mass of capital. . . . The world can augment its capital only in one way: viz by parsimony" (I, pp. 196–8), and "parsimony" here means voluntary private individual saving. This leads on, as Bentham puts it, to "the development of the Principle 'No more trade than capital' or 'capital limits trade'" (I, p. 201). In the *Manual* Bentham actually complains that Smith had not been explicit enough in proclaiming this principle, though he adds, with more justification, that Smith "conforms to it in every recommendation he gives, and writes almost throughout as if it were constantly uppermost in his thoughts" (I, p. 233).[1]

The principle, Bentham tells us, "that the trade of every nation is limited by the quantity of capital, is so plainly and obviously true as to challenge a place among self-evident propositions" (I, p. 212). As we know, propositions in economics laid down as plainly and obviously true and self-evident very often, when one begins to dig into them, fold up into definitions, tautologies or, at best, trivialities. So rather than argue over what Bentham "really meant," in the abstract, by this principle, it may be more fruitful to consider what in practice it implied for him by observing the lively political rabbits which he conjures out of this collapsible opera-hat. The first political rabbit to emerge from this proposition "No more trade than capital" has "*laissez-faire*" written all over it. It is the same animal (or at any rate one of a very similar species) as the Ricardo–Treasury view. As Bentham puts it:

> "Therefore no regulations nor any efforts whatsoever, either on the part of subjects or governors, can raise the quantity of wealth produced during a given period to an amount beyond what the productive powers of the quantity of capital in hand at the commencement of that period are capable of producing" (I, p. 201).

Hence government action can only *divert* investment resources from one line to another, not raise the level of investment.

The *second* important political rabbit—perhaps a rather surprising one—which Bentham conjures from his principle of "No more trade than capital" is that it would pay Great Britain to give up her colonies—or at any rate that there are no economic advantages, in the form of the investment opportunities they provide, to outweigh the burdens and expenses of their upkeep.

The chain of argument is that there is only a fixed fund of capital; there

[1] Bentham's "Principle" is suggested, as follows, by Smith: "No regulation of commerce can increase the quantity of industry in any society beyond what its capital can maintain. It can only divert a part of it into a direction into which it might not otherwise have gone" (*Wealth of Nations*, Everyman ed., I, p. 398).

This principle of "No more trade than capital" is, of course, highly reminiscent, or rather anticipatory, of the Wages Fund doctrine. Indeed, Bentham is described as the originator of that doctrine by Marx: "The classical economists have always been fond of considering social capital as a fixed magnitude possessing a fixed degree of efficiency. But this prejudice does not harden into a dogma until we come to the arch-philistine, Jeremy Bentham, the insipid pedantic leather-tongued oracle of the commonplace bourgeois intelligence of the 19th century. . . . I should call Mr. Jeremy a genius in the way of bourgeois stupidity," etc., etc., etc. (*Capital*, Everyman ed., Vol. II, p. 671).

are always just as profitable outlets for this at home, which do not require the extra military and administrative expenses that colonial investment necessitates. This assumption, that there are always just as profitable investment outlets at home—which incidentally seems possibly to conflict with Bentham's often-repeated generalisations about the falling rate of profit—is based on a sort of Say's market analysis applied to agriculture, to the effect that the supply of savings-investment will always create its own profitable demand —which is really implicit in the Turgot–Smith analysis.[1]

After *The Defence of Usury* and a brief essay on *Colonies and Navy* (1790), Bentham's next main economic work is the *Manual of Political Economy* (1793–95), from which we have already inserted some quotations.[2] In this treatise on the principles of economic policy Bentham is still to be found emphasising most strongly the *laissez-faire* conclusion which he takes to follow from his doctrine of " No more trade than capital " : government can only *divert* investment funds, not raise the total level of investment.

> " Whatever is given to any one branch, is so much taken from the rest. . . . If the government money had not taken that direction, private money would if the government would have given it leave. . . . Every statesman who thinks by regulation to increase the sum of trade, is the child whose eye is bigger than his belly " (I, pp. 234, 241 and 252).

[1] Bentham's hypothesis of unlimited investment opportunities in agriculture at home is based on the assumption that the British labouring class provides an ever-expanding market for beer: " In England, the lowest wages of labour will always find a man more bread than he can eat: therefore considerably more wheat than is produced at present, would, if not exported, not find purchasers. But the lowest wages of labour, nor wages much above the lowest, will not find a man as much strong beer as he can drink, nor even as he can drink without hurting himself. Therefore, even independently of exportation, there is no danger of the nation's being overstocked with such of the productions of agriculture as are fit for making beer. . . . Agriculture then will always find a sufficient market for itself: it is impossible it should ever fail to do so " (I, p. 206).

It would be most interesting to follow further Bentham's views on the economics of colonial development. Like those of other economists of the classical period, they tie in very closely with his analysis of saving, investment-opportunities and the falling rate of profit. By and large there seems to be a considerable change in Bentham's attitude to colonial development very broadly—though far from precisely—in tune with the change we are describing in his economic ideas. But the divergencies in Bentham's views on colonies seem very wide and erratic: contrast the vision with which the *Defence of a Maximum* (1801) ends and the preceding argument: " Men spreading in distant climes, through distant ages, from the best stock, the earth covered with British population, rich with British wealth, tranquil with British security, the fruit of British law " (III, p. 302), with Bentham's argument that if the two sides had acted rationally in 1776 the Americans would have sought to remain in the British Empire, and the British would have sought to get rid of the Americans (III, p. 357). The concluding paragraphs of *The Defence* cast some doubt on E. G. Wakefield's claim to have converted Bentham in his last years (1829–31) from his earlier view that colonisation was a waste of capital, to Wakefield's own strongly favourable views. Bentham had at least half-converted himself thirty years before. See *England and America*, p. 252 n., and R. C. Mills, *The Colonization of Australia*, pp. 94 and 152. For the latter reference I am indebted to Professor L. C. Robbins. As a further example of Bentham's vagaries one may cite his attack on the Navigation Laws at one point, and his justification of them at another (Contrast I, p. 211, and III, p. 340). Similarly with the infant industries argument for protection.

[2] What appears as *The Manual of Political Economy* in Bowring's edition is, according to Dr. Stark, concocted from a mixture of manuscripts of two very different dates. Dr. Stark has sorted out the two works. Much of what appears as *The Manual* in this edition is published for the first time and dates from 1793–95, while much of what Bowring published as *The Manual* is now to be found in a work now called *The Institute*, dated 1801–4—the last important work in this edition.

However, though continually repeating such sweeping categorical assertions, Bentham does for the first time introduce a qualification, which was to grow later into an extensive body of monetary analysis. This qualification comes in a note at the end of the *Manual* headed " Connection of the Paper Money Question with the Rest of the *Manual*." Though " forced accumulation " by means of taxation is first referred to in the main part of this work, the proper concept of " forced saving " (though not, of course, the *term*), appears first in this addition on paper money.

Bentham writes, Government " can't increase wealth because they can't increase capital. Is there anything it can and ought to do to increase capital? Does paper money, for instance, increase capital? " (I, pp. 269–70). Bentham's answer in equally brief note form is:

> " If all were fully employed it [the issue of paper money] could not increase industry. If any were unemployed, or not fully employed, it might increase industry *pro tanto*. . . . It actually is productive of an addition to the mass of national wealth, in as far as it gets extra hands, or sets them to work at extra hours " (I, pp. 270–1).

However, at this point, in contrast with his later views, Bentham simply mentions this possibility as an abstract theoretical *curiosum*, and considers that in practice attempts by governments to act on it would be dangerous.

This is the last that we have from Bentham on the subject for several years. But it was a turning-point. For when he returns to the subject Bentham advances straight through the cleft he had thus opened in the Turgot–Smith saving-investment analysis and in the Principle based on it, of " No more trade than capital." In fact, he completely abandons that Principle and the particular assumptions on which it rests, as well as the policy conclusions he drew from it.

His lengthy work on *Circulating Annuities* (1800)—unfinished like so many of the others—is concerned with his scheme for interest-bearing government notes which would serve both as paper money and small savings certificates. Here Bentham strenuously analyses the effects of changes in the quantity of money on the level of economic activity. An increase in the quantity of money may, Bentham repeatedly tells us, either or both raise prices or raise output—if initially there is unemployed or misemployed labour available. He observes:

> " In political economy as in chemistry, results are scarce ever obtained pure: while part of the new influx [of money] is employing in producing the beneficial result of an increase of real wealth through the medium of profitable labour, other part will be employing itself in the raising of prices of labour here and there, and thence of this and that class of goods: and, indeed, it is scarce possible that a new mass of dormant labour should be called forth into act without making some addition to the recompence given to the mass already in employment " (II, p. 313).

Above all, Bentham notes, monetary inflation may be a serviceable policy in " *war time*—a time in which money having to be raised in large quantities

for the service of government, must for a time be diverted from other channels" (II, p. 315).

The effects of monetary expansion depend on how or where the new money initially enters the system and on the propensity to consume or save of those who initially receive it. It is not too anachronistic to use the modern terms, for Bentham quite clearly understands something of the significance of the consumption function and even attempted a very rough calculation of its order of magnitude. For example he notes: "It cannot be supposed that upon the mass of income from labour—most of it . . . being the labour of the poorest classes,—the ratio of savings to income can amount to anything like what it does in the case of income from profit of stock: to anything like $\frac{10}{15} = \frac{2}{3}$ of the amount of income: one should scarcely expect to find it amount to $\frac{2}{30}$ (II, p. 324 *n*)." Bentham also notes that a higher percentage of the new money paid out to highly-salaried officers will be saved than of that paid out to the lower-salaried (II, p. 322).

At one point Bentham rejects the possibility of deflationary cures for unemployment and is led into some most "mercantilistic"-sounding statements, in direct contradiction to his earlier principle of the fixed relation between voluntary saving and capital formation:

> "No addition is ever made to the quantity of labour in any place, but by an addition made to the quantity of money in that place. . . . In this point of view, then, money, it should seem, is the cause, and the cause *sine qua non*, of labour and general wealth" (II, p. 326).

He adds: "This and a great deal more that might be added, is not in Adam Smith—but it belongs not the less to the science so well taught by Adam Smith" (II, p. 330).

In fact, in a remarkable footnote Bentham proceeds to criticise Smith for at least one of the main themes of his attack on mercantilism:

> "Though 2 millions' worth of gold and silver is not worth a farthing more than 2 millions' worth of anything else, there is not on that account any absurdity in the exultation testified by public men at observing how [great] a degree what is called the balance of trade is in favour of this country. . . . Seduced by the pride of discovery, Adam Smith, by taking his words from the kitchen, has attempted to throw an ill-grounded ridicule on the preference given to gold and silver" (II, p. 337 *n*).

In fact, Bentham claims that he has indicated the way in which "an answer may be found to a question for which I have in vain endeavoured to find an answer in Adam Smith and other books" (II, p. 339)—that question is by what process and with what chain of causation new money enters the economic system. He complains that "for my own part, I must confess, I never was able to obtain what to me appeared a clear insight into this part of the subject from the instructions of Adam Smith. Metaphors taken from wheels and water seemed to take place too often of definition and exemplification" (II, p. 342 *n*).

In his different works Bentham alternates, superficially somewhat con-

fusingly, between warnings against the damage done by *de*flation and forebodings as to the injustices of *in*flation—long and short term (as in *The True Alarm*). But whether he is concerned with the one or the other Bentham constantly emphasises the crucial importance of whether the initial situation is one of full employment or one where there are unemployed resources, that is, there is no question for Bentham of full employment, or something near it, constituting some sort of realistic norm or equilibrium towards which the system actually "tends." Bentham fully appreciated the distinctions implied between *in*flation and *re*flation, and *de*flation and *disin*flation. For example, at the end of his pamphlet *Paper Mischief Exposed* (1800–1) Bentham examines the effects of what he calls "the money-hoarding system," or "the system of laying up hoards of money on the part of government, in reserve for casual exigencies" by some kind of budget surplus (II, p. 453). (Incidentally the "Paper-Mischief" is not that of paper money as such, which Bentham approves, but that of the unregulated issue of paper-money by numerous private banks.) In a period of full employment, or over-full employment, with prices rising, such "government hoarding" will not lower output but will damp down the rise of prices. But on the other hand, "let us suppose that there exists in the country a quantity of unemployed capacity for labour. . . . In this case the defalcation from the mass of money is really productive of a correspondent, though not equal, defalcation from the mass of wealth. The money hoarded by government, and hence defalcated from the stock of money in circulation, is parcel of the money raised by taxes: the taxes are imposts laid, for the most part at least, if not exclusively, on expenditure" (II, p. 454).

Bentham's next work is called *The True Alarm* (1801), its subject being the long-term and short-term dangers and injustices of inflation (especially with an unregulated private note-issuing system). Bentham wavered between writing a formal treatise and a polemical pamphlet and in the end—as usual—abandons the work unfinished. However, he turned the manuscript over to his editor Dumont, who ten years later (in 1811) consulted J. Mill and Ricardo about preparing it for publication, and we have the Notes on this work which Ricardo then made (*v.* Vol. III of Sraffa's edition p. 259).

Here Bentham attacks the Turgot–Smith savings-investment analysis at its roots, by setting out the different ways in which the individual can use his money income. Bentham explicitly includes what he calls "laying it up"—a possibility omitted in Smith's analysis of saving and investing. He also very precisely puts his finger on the two vulnerable points in that analysis—which nevertheless, as Schumpeter has shown, remained so extremely influential right through the nineteenth and into the twentieth century. These two vulnerable points are, first, analysis in real terms applied with no (or no adequate) qualification to a monetary economy; and, second, exclusion of the possibility of what Bentham calls "laying up" or the possibility of "hoarding."

Later on Bentham examines the effects of an increase in frugality or

decrease in consumption (III, p. 120). The first effect of a decrease in consumption, if it is not offset, is a fall in prices and then of production. But, of course, the fall in consumption may be offset by an increase in investment either on the part of the savers themselves or of others who have borrowed from the savers, directly or through a banker, either to invest or consume. In this case only frictional adjustments will be necessary. But if the income saved " instead of being put into circulation, is for an indefinite time put into a chest and kept there " then the " case is the opposite of the preceding one." The fall in consumption is followed by a fall in prices, production, profits and investment. Thus frugality is now, for Bentham, by no means unconditionally beneficial as it had been in his earlier writings and in Smith. In fact, Bentham goes on to extol the benefits of luxury expenditure in the manner of Mandeville:

> " Let the rich and those in power spend all their revenue, as far as is possible, on superfluities, they cannot deprive the merchant of his profit on their expenditure : and as for the merchant, . . . he will not be able to rid himself of that disposition to accumulate which, to a greater or less degree, seems to be inseparable from his mode of life. Hence whatever the manner of expenditure . . . the merchant will not fail to levy a tax on prodigality for the encouragement and the increase of industry and wealth " (III, p. 124).

Bentham also takes up in *The True Alarm* his doctrine that an expansive monetary policy can raise the level of economic activity without voluntary saving. The effects of such a policy will, of course, turn on whether or not there are unemployed resources. Here Bentham emphasises how very difficult it is to define or perceive in practice when this exact point of " full employment " has been reached. As to this Bentham makes a statistical estimate that would seem to require some upward revision for the period since 1800:

> " A thousand politicians have ventured predictions, and a thousand politicians have been wrong. Everybody wishes to decide the question in order to declaim about the actual state of affairs and to say with emphasis that we have reached the highest possible degree of prosperity and that that prosperity is no more than a dream which is going to vanish. To me it seems that something is gained if the difficulty of pronouncing on this point is shown. It amounts to a refutation of all the positive assertions of the two parties, to giving both of them a lesson in moderation and toleration. In the eyes of impassioned ignorance there exists no difficult question " (III, p. 148).

It is interesting to turn to Ricardo's notes on *The True Alarm* and find him expressing his complete *dis*agreement with Bentham's doctrine as to the possible beneficial effects of an increase in the money supply—he does so as repetitiously as Bentham states his doctrine.

We find Ricardo asking: " Why should the mere increase of money have any other effect than to lower its value? How would it cause any increase in the production of commodities. . . . Money cannot call forth goods—but goods can call forth money " (reminiscent of a passage in Smith). In

fact, Bentham's doctrine is for Ricardo " a stumbling block . . . that money is the cause of riches has been supported throughout the work and has in my view completely spoiled it." [1]

Ricardo, in fact, could see nothing at all in Bentham's doctrine, just as he could see nothing at all in Malthus' ideas on effective demand, and J. B. Say's ideas on utility and value. He was, of course, holding with the strictest logic to the Turgot–Smith theory of saving and investing—to what he called " Mr. Mill's Principle," or the Say–Mill analysis of markets.

There is just one more point to add by way of illustrating the development of Bentham's ideas, and this is from his next work *The Defence of a Maximum* (1801) (*i.e.*, a maximum price for bread). Bentham here referred back to his arguments in the *Defence of Usury*, fourteen years before, where he had *attacked* a *minimum* legal rate of interest. He is at pains, in defending a maximum price of bread, to point out that he did not attribute to the market rate of interest any automatic self-adjusting equilibrating tendencies—a view which supporters of his attack on the control of the rate of interest had ascribed to him. This passage is of considerable general interest from the point of view of Bentham's attitude to the principles of economic policy, and his scepticism as to the methodology of equilibrium theorising and the economic harmonies. His particular point is that the rate of interest does not adjust (or optimally adjust) saving and investment:

> " Gentlemen, when they have done me the honour to join with me, as it seemed to them, in opinion on this subject, have sometimes, whether for shortness or for ornament, referred in this way to a law of hydrostatics as the ground for it. Money, according to my opinion, I mean according to their edition of it, was a sort of thing that would find its own level, or that ought to be left to find it. Between what does naturally take place, and what ought to take place, there is indeed some difference: but it is a difference which moralists are apt enough to overlook, which they constantly overlook as often as they talk of the law of nature. . . . Neither on that or any other occasion have I ever given, or shall I ever give, serpents for fish, sentiment or metaphor for argument. I have not, I never had, nor ever shall have, any horror, sentimental or anarchical, of the hand of government. I leave it to Adam Smith, and the champions of the rights of man (for confusion of ideas will jumble together the best subjects and the worst citizens upon the same ground) to talk of invasions of natural liberty, and to give as a special argument against this or that law, an argument the effect of which would be to put a negative upon all laws. The interference of government, as often as in my humble view of the matter the smallest balance on the side of advantage is the result, is an event I witness with altogether as much satisfaction as I should its forbearance, and with much more than I should its negligence. Neither in that book [*The Defence*] nor in any other book of mine will any expression be found by which any such association is attempted to be made between the idea of money and

[1] See Ricardo, *Works*, ed. Sraffa, Vol. III, pp. 298, 301, 317–18 and 333. See also Ricardo's extensive comments in his first letter to James Mill in 1811 (Vol. VI, p. 14). In 1822, when Ricardo visited Geneva, he further discussed with Dumont Bentham's economic ideas: "There were few of his doctrines, to which Ricardo did not object " (see Sraffa's note, Vol. III, p. 261 *n.*).

that of a level, *i.e.* between rates of interest and levels. I choose rather to remain unread than feed the reader with such arguments. The particles of a mass of fluid, the particles of a mass of water, have a propensity, when left to themselves, to range themselves upon the same level: human creatures have on their part a propensity to save their own lives: and when water in the search after a level is making its way too fast into a ship, pumps are employed by men to prevail on it to get the better of that propensity, and betake itself to a higher level, and this may serve as an argument in favour of a maximum to any gentleman who finds himself disposed to consider it as such" (III, pp. 257–8).

In comparatively a very few years Bentham had moved a very long way from his earlier wholehearted acceptance of the Turgot–Smith analysis of saving and investment and his dictum that "every statesman who thinks by regulation to increase the sum of trade, is the child whose eye is bigger than his belly."

IV

Our last quotation brings us to Bentham's views on the respective roles of state regulation and the free price mechanism, or his theory of economic policy—a subject which is now one on which widely diverging and even diametrically opposite views are authoritatively advanced. For a long time the consensus of opinion held that Bentham was a representative of thoroughgoing *laissez-faire* doctrines or, at least—which *may* be rather different—was typical of "classical" nineteenth-century economic liberalism. Dicey and Leslie Stephen must have had much to do with establishing this view of Bentham. Dicey used "Benthamism" and "Individualism" as alternative terms, and held that "faith in *laissez-faire* . . . is the very essence of legislative Benthamism."[1] Keynes claimed that in Bentham "we discover the rule of *laissez-faire*, in the shape in which our grandfathers knew it."[2] Alternatively, Bentham and Adam Smith are linked together as the two great joint patriarchs of economic liberalism.[3] Dr. Stark's editorial comments are, with some qualifications, in tune with this conception. He writes of Bentham's "fundamental liberalism" (III, p. 32), noting that he was "a liberal of the socially progressive variety, not a doctrinaire who would have sacrificed everything on the altar of the dead and deadening principle of *laissez-faire*" (III, p. 52). However, Dr. Stark also tells us that Bentham

[1] See A. V. Dicey, *Law and Opinion in England*, 2nd ed., p. 44. Apparently Dicey had some doubts later about his equation of Benthamism and individualism. In the preface to the 2nd edition he writes: "It is a curious question how far Bentham's own beliefs were logically opposed to the doctrine of sane collectivism" (p. XXX). On Bentham and the rule of *laissez-faire* Leslie Stephen wrote: "In purely economical questions scarcely an exception was admitted to the rule" (*The English Utilitarians*, Vol. I, p. 310). See also J. Bonar, *Philosophy and Political Economy*, p. 189, and R. F. Harrod, ECONOMIC JOURNAL, 1946, p. 438, who writes: "We cannot really have a definition of individualism that excludes Bentham."

[2] *The End of Laissez-faire*, p. 21.

[3] See H. Simons, *Economic Policy for a Free Society*, pp. 104–5: writes of "Adam Smith and Jeremy Bentham and the tradition of thought identified with them." W. H. Hutt actually describes Bentham as "holding even more unwaveringly the *laissez-faire* doctrine" [than Smith], *Economists and the Public*, p. 137.

was " a typical 19th-century liberal in economic matters," and " in his heart of hearts a confirmed votary of *laissez-faire* " (II, p. 8). Presumably there is no direct contradiction here, but the category of " a confirmed votary " who nevertheless " would not have sacrificed everything on the altar " seems to introduce an extremely difficult theological subtlety.

However, in contrast with this view of Bentham as a representative of *laissez-faire* or, alternatively, as a leading fellow-" classical " alongside Smith, Ricardo and Senior, a diametrically opposite view has been gaining ground in recent years. For example, in his Centenary lecture C. K. Ogden, the *doyen* of Bentham-*forschung* referred to him as " the greatest social engineer in history bristling with Five-Year Plans." [1] Sir G. M. Trevelyan " concludes generally that Benthamism was ' in many respects the exact opposite of *laissez-faire*.'" [2] Professor J. B. Brebner goes so far as to argue (criticising Dicey) that " in using Bentham as the archetype of British individualism he [Dicey] was conveying the exact opposite of the truth. Jeremy Bentham was the archetype of British collectivism . . . Bentham and Smith were fundamentally contradictory of each other in their ideas of how to secure the general good." [3] Finally, a very recent study has concluded that " thanks to the efforts of many current scholars it is at last becoming clear that Bentham may with more truth be called the patriarch of British collectivism than the father of individualism." [4]

We are prepared to take the risk of opining that at least these more recent views are considerably less misleading than the opposite picture of Bentham as a representative of *laissez-faire* or, alternatively, as a classical liberal. But the one moral which clearly emerges from this rather confusing intellectual situation is that any attempt to pigeon-hole or classify (or " classicalise ") Bentham is bound to be particularly misleading, and any attempt at a precise and concise generalisation about his views on the role of the State especially hazardous.[5] In the first place, much important evidence has not been available, and even now we may not have all that is relevant. Secondly, the writings themselves were often dashed off unrevised, with the author never attempting to reconcile inevitable contrasts, or strike an explicit and clear balance of emphasis. Thirdly, Bentham's own views were constantly changing, sometimes according to a steady long-term trend, while sometimes

[1] Cf. *Jeremy Bentham*, p. 14.

[2] See the quotation by D. H. Macgregor, *Economic Thought and Policy*, p. 68.

[3] See J. B. Brebner, " *Laissez-faire* and State Intervention in Nineteenth-century Britain," *Journal of Economic History*, Supplement VIII, 1948, pp. 59 ff. Brebner refers to the Constitutional Code of Bentham as " that forbidding detailed blueprint for a collectivist state." Professor L. Robbins, on the other hand, refers to the Code as " this great project for a practical Utopia " or " the good society " (*The Theory of Economic Policy in English Classical Political Economy*, p. 42). We are not concerned here with whether the society Bentham was trying to outline was " forbidding " or " good," but simply that it is extremely different from that argued for by Smith, Ricardo, Senior and other " classical " liberals.

[4] Cf. M. P. Mack, *op. cit.*, p. 88.

[5] Of the leading authorities on Bentham's view of the role of the state, Professor J. Viner seems alone to be beyond all criticism. He reminds us of the very wide range of state activities supported by Bentham without trying to categorise, classify or " classicalise " him. See *American Economic Review*, March 1949, " Bentham and J. S. Mill: the Utilitarian Background."

simply fluctuating around the trend or according to no discernible trend. Any attempt at a concise generalisation would at least have to distinguish between Bentham's earlier and later positions.

With these volumes before us it can now be much more safely said that whatever *laissez-faire* maxims Bentham may have emitted from time to time —more frequently in the earlier phases of his economic work (*c.* 1786–95)— as the years went on, he is to be found suggesting more and more economic functions for the State, some of them very fundamental and pervasive. His injunction to the State to " Be Quiet " (" without some special reason "), cannot signify much when one finds him going on to find enough " special reasons " for " noise " to satisfy a whole series of Fabian Summer Schools. But although it seems much less misleading to regard Bentham rather as a prophet of the Welfare State than of the Gladstonian Budget, we do not want to try here to categorise or classify him. We simply wish to contrast his views on the role of the State with those of Smith, Ricardo and Senior and to suggest that he cannot be regarded as one of the " classicals," if this term is to preserve any doctrinal significance.

The contrast between what Bentham had to say on the role of the State in the economic field and the views of any economist reasonably describable as a classical liberal may be summarised under five heads:

(1) We have just seen how Bentham came to reject the Turgot-Smith theory of saving and investing and the idea of the rate of interest as a beneficial automatic regulator of saving and investment. His change of view on this subject obviously has quite fundamental implications for his view of the role of the State in the economic field. None of those regarded as typical " classical " economists argued in the manner of Bentham that the State either could or should beneficently act on the aggregate level of investment and employment, or be responsible for maintaining these at a high level. Even Malthus is hardly a genuine and complete exception.

(2) No " classical " economist sets out with such explicitness and detail so many and varied economic functions for the State: the Bank of England should be nationalised and the issue of paper money should be a monopoly of the Government; there should be governmental licensing and participation in all banking and some government control of speculation; there should be government activity in everything connected with the propagation of knowledge—universities, schools, agricultural and scientific research and the collection of statistics; the Government should also be responsible for hospitals, health services, transport and means of communication. A newly-published paper (*Plan for Augmentation of the Revenue*, 1794–95) suggests that the superior security and longevity of the State, as compared with private enterprise, suits it for the taking over of insurance business on a large scale, in particular life annuities, life insurance, lotteries and the various activities of friendly societies.

(3) Bentham approaches the problem of the agenda of the State by laying down four overriding ends of economic policy, subject only to—(or which are in fact the constituents of)—the supreme end of maximum happiness. The four ends are, in order of importance: subsistence, security, opulence and equality. The fulfilment of these four ends justifies any amount of State action, and three of them in their very nature—subsistence for all, security and equality—are bound to call for far-reaching intervention. This prior specification of overriding ends surely amounts to an approach to the problems of economic policy from a direction diametrically opposite to that of Smith and Ricardo. Smith, at any rate, rather starts from the fundamental beneficence of the free-market mechanism and then traces around this the framework of State activity necessary to maintain, and at exceptional points correct or supplement, this mechanism.[1]

What was really implied for Bentham in his four different ends of policy is brought out in a remarkable outline draft (or "*brouillon*") dated October 22, 1800, and headed "National Prospects or a Picture of Futurity" (Vol. III, pp. 481–3). "Opulence" includes "maximum opulence of the lower classes. . . . The higher the wages of labour, the better consistent with national security." Nevertheless, Bentham does not believe that government can raise wages above "what is sufficient for bare subsistence to a family of average size." But he *does* believe that government could and should be "giving security to that measure of subsistence." Bentham goes on to note the "Insufficiency of the general propensity to accumulation to ensure a sufficiency of the principal subsistence for man, *i.e.* corn. Necessity of the interference of government for that purpose." Further government could and should promote opulence "so far as concerns the increase of capital: by forcing *savings* from pleasurable expenditure and applying the amount in the shape of capital."

(4) Though repeatedly urging that the individual is the best judge of his own interests, Bentham explicitly rejects the general principle that the hidden hand can be relied upon to work adequately towards the end or ends he lays down: "That the uncoerced and unenlightened propensities and powers of individuals are not adequate to the end without the control and guidance of the legislator is a matter of fact of which the evidence of history, the nature of man, and the existence of political society are so many proofs" (III, p. 311).

[1] F. A. Hayek in his essay on *Individualism True and False* classifies Bentham as a "false" individualist, that is as a rationalistic, in a sense *a priori*, individualist (who is really a precursor of totalitarian dictatorship), rather than a "true," cautious, empirical one. There certainly are some strains of "false individualism" to be found in Bentham's writings, and this laying down of comparatively precise over-riding "ends" of policy is the most dangerous of them, because, of course, the laying down of over-riding ends suggests the justification of *any* means; but there are also still more pervasive strains of "true" (*i.e.*, empirical) individualism and "true" collectivism (if on Hayek's definition collectivism can be "true," and, if it cannot, such arbitrariness would, perhaps, itself be an example of "false" individualism) (see *Individualism and Economic Order*, pp. 4 ff.).

In particular, the primary end of subsistence for all (or for as many as possible) required, according to Bentham, a policy of "magazining," or of the wholesale storage by the state of food supplies, and the fixing of maximum prices: "Insurance against scarcity cannot be left with safety to individual exertion." On the subject of price-fixing he writes:

"As I have all along suspected, the horror in which it has been held by the best opinions, has nothing but prejudice, and a too indiscriminate attachment to general principles for its foundation" (III, p. 262). It is not simply that Smith, James Mill, Ricardo or Senior did not happen to put forward such far-reaching proposals, it is rather that one cannot conceivably imagine them doing anything but oppose schemes like Bentham's to the uttermost, as did Burke.[1]

(5) Bentham's explicit mention of equality as an end of policy (although he puts it last), along with the analysis of diminishing utility on which he based it, has no important parallel in the writings of other classical liberals. Certainly at other points Bentham emphasises, in direct contrast with his egalitarianism, the importance of preserving established expectations. But this also runs counter to the principle of leaving distribution to the free market, or to Ricardo's dictum, for example, that "like all other contracts, wages should be left to the fair and free competition of the market and should never be controlled by the interference of the legislator." [2] Professor Stigler has emphasised

[1] Contrast with Bentham's statement, Burke's: "To provide for us in our necessities is not in the power of government. It would be a vain presumption in statesmen to think they can do it" (*Thoughts on Scarcity*, *Works*, Vol. III, World's Classics, p. 3). James Mill, though not exactly deficient in "presumption," and supposed to be a disciple of Bentham rather than Burke, in fact was explicitly on Burke's side on this issue. In discussing a somewhat similar scheme for "buffer stocks," put forward by Sir James Steuart, to counter extreme price fluctuations, Mill writes: "The author, it is evident, had never reflected with any accuracy, upon the operation of free trade, and therefore sees not the equalizing results which it is calculated to produce. He proposes, accordingly to do that very imperfectly, by a great number of very troublesome regulations, which perfect freedom of trade would do completely of its own accord. Nothing more is wanting than to leave the farmer at perfect liberty to sell his corn wherever he can get the best price for it, and the consumer to buy it wherever he can get it cheapest, without any restriction, without either burthen or encouragement. The necessary effects of this are to secure to the farmer and to the people at all times those exact prices which are best adapted to their mutual interests. To depart from this course is only to disturb the laws of nature, to gratify the freaks or the interests of particular men" (*Literary Journal*, 1806, p. 234). One cannot tell how Professor Hayek would classify this passage by Mill, but it *may* seem a clear case of "false" rationalistic individualism, with the "true" empiricism on the side of Steuart and Bentham. Certainly Bentham would have exploded at this appeal to "the laws of nature" if it had come to his notice. It is also reasonable to guess that Smith, Ricardo and Senior would have been on the side of Burke and James Mill, and not on that of Steuart and Bentham. (The above quotation from Mill may be contrasted with Bentham's discussion of the rate of interest quoted at length at the end of Section III above.)

[2] *Principles*, Sraffa ed., p. 105. Or compare Ricardo's statement to Trower (*Letters*, Sraffa edition, Vol. VIII, p. 133): "Political Economy, when the simple principles of it are once understood, is only useful, if it draws governments to right measures in taxation. We very soon arrive at the knowledge that Agriculture, Commerce, and Manufactures flourish best when left without interference on the part of Government, but the necessity which the state has for money to defray the expenses of its functions, imposes on it the obligation to raise taxes, and thus interference becomes absolutely necessary."

" the relative unimportance of the distribution of income to the classical economists "—a justifiable generalisation so long as Bentham is not included.[1] Bentham's recognition of the egalitarian argument which might be deducible from the principle of diminishing utility, and his multifarious taxation proposals, especially that for limiting inheritance, foreshadow the whole recent trend of British tax policy. At what stage, if any, on the road to our present position Bentham would have wanted to get off the bus, it is impossible to say. But Bentham was unquestionably one of the major influences in getting the bus started on its present route, and this distinguishes him essentially—for better or for worse—from " classical " liberals like Smith Ricardo and Senior.

V

The greater part of this account of Bentham's economic ideas rests on material published for the first time in these volumes. Thus, as an economic theorist this most celebrated and influential of Englishmen is something of a Cournot or a Gossen, that is, one whose work as an economist was largely unknown and of virtually no influence in his own day. In contrast with his political and legislative ideas, his writings on monetary theory found no disciples to follow them up, while what *was* published of his economic writings somehow gave rise to most misleading and confusing accounts of his position on the principles of economic policy.

We have already noted that when Dumont consulted Ricardo and James Mill on preparing for publication *The True Alarm*—perhaps the most important work in these volumes—they were in complete disagreement with its central theories and did not consider it worth proceeding with, or its ideas worth exploring further—in spite of the almost superhuman prestige which Bentham is supposed to have had in their eyes. Nor, for his part, did Bentham ever seem to have shown any interest in or agreement with Ricardo's *Principles*, his sole recorded comments thereon being: " In Ricardo's book on Rent there is a want of logic. . . . He confounded cost with value." As regards economic ideas, therefore, there seems to be no more misleading claim than Bentham's to the effect that Ricardo was (through James Mill)

[1] See *Five Lectures on Economic Problems*, pp. 1–2. Professor Stigler himself notes differences between Bentham and " Classical " economists on this subject. Moreover, though he refers to it rather distastefully, Bentham recognises what might be called " dog-in-the-manger egalitarianism " as a force which policy-makers must take into account from the point of view of social peace and cohesion (and which so many over-simplified theories of economic policy of classical descent do *not* take into account). That is, Bentham did not hold to the facile and far-reaching assumption that the satisfaction an individual gets from his income is a function simply of *its* size alone, while the size of his neighbours' incomes is entirely irrevelant: " If on any occasion the interest of the public and the interest of the individual happened to be so combined and tied together, that on condition of seeing an individual reap a profit to the amount of a hundred thousand, the public might reap a profit to the amount of a million, the plan would be turned aside from or rejected. Whatever satisfaction might be excited by the idea of the million gained by everybody and nobody, would be sowered and turned to regret by a glance of the hundred thousand pound gathered into a store of which the owner was in view " (III, p. 297).

" my spiritual grandson." [1] This could only apply to some of Ricardo's political and parliamentary activities. Bentham's economic ideas, both as regards theory and policy, run on fundamentally different lines from those of Ricardo. There are no grounds for supposing that a single sentence of Ricardo's *Principles* would have been different if Bentham had never existed. The questions Ricardo formulated, the assumptions he reasoned from and the method he used are sharply distinguishable from those of Bentham. In Bentham's economic writings there are no long chains of deductive reasoning. His approach is far more empirical and statistical, and he would have rejected the idea of political economy as a mainly deductive science based on a very few fundamental and more or less self-evident assumptions—as classically described, for example, by Senior. Though J. S. Mill's general approach to economic policy diverges less from Bentham's than does his father's or Ricardo's, the theoretical differences remain fundamental; and there is no sign of the younger Mill ever having read, much less marked and digested, Bentham's unpublished economic writings.

On the two central questions of economic theory, that of the determination of relative values and that of the determination of the main economic aggregates, Bentham in his later and more definitive writings differed from the classical approach of Smith and Ricardo, all along the line. So although, like Ricardo, Bentham started from the *Wealth of Nations*, and even in *The True Alarm* writes that the work of Smith " still is and deserves to be the textbook of political economy," this cannot bridge the quite fundamental differences in approach which Bentham had opened up. Bentham himself could not realise or foresee how important and fundamental the differences between his ideas and those of Smith and Ricardo were to become, when the lop-sided classical emphasis on labour and cost of production in value, and on the rate of interest as a smooth and beneficent regulator of saving, investing and aggregate employment were to harden into dominant and largely unquestioned orthodoxies. On the one hand, Bentham's ideas, both on value and on saving-investment and employment, follow the lines of pre-Smithian " mercantilist " writers such as John Law, Berkeley and Sir James Steuart. On the other hand, they point forward to Jevons, Edgeworth and Marshall in one direction, and to Keynes in another. Only as a rather mild and elastic type of Malthusian does Bentham share in any of the main " classical " doctrines. If Bentham is still to be described as a " classical " economist, along with Smith and Ricardo, then this much-controverted adjective is virtually emptied of any doctrinal significance.

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[1] See Bowring's edition of the *Works*, Vol. X, p. 498. We have noted above a practical issue—that of price control of basic foodstuffs—where Bentham and J. Mill were on diametrically opposite sides. The example, surely, has some significance in terms of general principles. J. S. Mill noted the wide differences in cast of mind between his father and Bentham: " His mind and Bentham's were essentially of different construction " (*Autobiography*, World's Classics, p. 172). On the other hand, there is certainly a very close intellectual affinity between Mill and Ricardo; see " James Mill and the Political Education of Ricardo," *Cambridge Journal*, November 1953.

WALRAS: A RE-APPRAISAL

An English translation of Léon Walras' *Eléments d'Économie Politique Pure* has at long last appeared.[1] It may be said at once that Professor Jaffé deserves great praise. His English is lucid, and he has provided an apparatus criticus and an excellent commentary, which are invaluable aids to the study of the text. They have clearly required long and diligent effort, and they show precision of scholarship, balanced judgment and theoretical expertise, which entitle Professor Jaffé in his own right to a high standing among economists.

It is fitting to make this publication the occasion for an attempt to reappraise Walras' position in the history of economic theory. That he was a master mind in some sense is not in doubt. He is essentially an economists' economist; the esteem in which he has been held by theorists has on the whole continued to grow through the years; he has had great influence. One must not, however, lose one's sense of proportion.

In the quest of a just appraisal, it is needful that we remind ourselves of the essential features of our subject as it has been developed so far. Unhappily it is still largely lacking in quantitative laws; this makes the award of honours to economists more difficult. The enunciation or "discovery" of such a law in the physical sciences is usually a definite event, and one's task is thus reduced to estimating its importance and the degree of ability or genius required for its excogitation.

The intellectual achievements that the great economists have to their credit are less distinctly demarcated. Economists may formulate tools of thought which serve to clarify our understanding of the complex economic data with which we are confronted. The tools may consist of concepts, by which phenomena may be classified. These concepts have been many and various; sometimes they complement one another; others represent alternative methods of organising the phenomena to be studied (*e.g.*, "velocity of circulation of cash"; "demand for purchasing power over commodities in the form of cash"). These concepts are to be judged for merit not mainly by the precision with which they are, or could be, defined, but by their serviceability in aiding the thought processes by which the total complex is analysed. They may be capable of generating certain self-identical propositions (quantity theory of money, equality of sales and purchases), which are in turn to be judged for merit by the same criteria.

Then the economist may construct what we have recently come to call a model. This may relate to a complex of events and relations constituting something less than the whole economy, but be serviceable for valid use on

[1] *Elements of Pure Economics, or the theory of social wealth.* By Léon Walras. Translated by William Jaffé. (London: Allen & Unwin, for the American Economic Association and the Royal Economic Society, 1954. Pp. 620. 42*s*. Obtainable by Fellows of the Royal Economic Society at the special price of 28*s*. on application, including remittance, to the Secretary, The Royal Economic Society, The Marshall Library, Downing Street, Cambridge.)

the basis of some *ceteris paribus* assumption. Or, crowning achievement, it may be a model of the whole economy. Such a model necessarily involves abstraction and approximation. Not all motives, not all circumstances, find their places in it. For a good model it is claimed that the more important motives, the more important relations, are given their appropriate places.

Now when we assign a particular model, which may have played a great part in the development of economic thought, to a particular economist and thereby claim greatness for him, it often happens that various concepts and functional relations, comprised within the model, are found to be attributable to earlier authors, so that the claim for originality on behalf of the economist in question is whittled away. But this may be ill-judged. For it is in the synthesis and the creation of a complete model that his genius and claim to greatness may consist.

There is another more deceptive way by which a reputation may be eroded. It may be found on a nice examination that many of the concepts used in the model are ill-defined and many of the relations incorrect. This seems very damaging, but it may not be so in truth. It may be necessary, for good judgment, to look beyond the precise features of the model as specified by the author to its *general structure*. It often happens that various models, differing in many particulars but having a similar general pattern, are successively presented by economists. If an economist invents a model of a certain general type, which many subsequent economists feel impelled to reconstruct and vary, this constitutes the supreme claim to greatness. The claim may be upheld even if—in the worst case—every single feature of the original model has to be altered in detail.

If we look about for economists to whom to give the palm—and the search is relevant to provide ourselves with a yardstick, since Walras' admirers claim for him nothing less than the highest honours—one can hardly resist the claims of Adam Smith and Ricardo. Models of the general type that they initiated have been reconstructed over and over again, not only by the English classical school, but down to the present day. It is necessary to mention both names, because, while the essential seminal ideas were in Adam Smith, his system was fragmentary. Ricardo was the first to present a complete model—one which, for all its faults, was self-consistent and displayed the whole economy as a single interdependent system. His presentation was shocking, but that is a secondary matter. I conceive it to have been an important element in the greatness of Alfred Marshall that he appreciated the true quality of Ricardo, despite the existence of certain defects in his system and despite his faults of presentation; Marshall was more concerned with essentials than with flaws of secondary importance.

We must widen the field. With all due apologies to those of my contemporaries who are not convinced, I would claim the highest palm for Keynes. I suggest that he has presented a model of which we are likely to get reconstructions and variants for many years. It does not injure the case for him to say that many of the relations incorporated in his model had already been formulated by other economists, although due credit should

always be given to them. Nor need we be put off by the fact that there may be much in his model to criticise and reject. The claim on his behalf is that the general structure of his complete model was new, and that many variants of the same general structure will be constructed and continue to be used for a long time. That remains to be seen. It might plausibly be objected that this is not likely to be so, on the ground that his model is static, while interest in future is likely to be concentrated upon dynamic models. But statics and dynamics must have some concepts in common and some inter-relation between their principles. Keynes' model, in this being unlike previous complete models of good standing, lends itself easily to dynamisation, so that the movement of interest towards dynamics, so far from being the death knell of the Keynes system, may serve to give it longevity.

How does Walras stand by comparison with these authors of generic model types? The answer to this question is not altogether easy. One way of summarising his achievement is as follows. Adam Smith had the idea that competition and the mechanism of the market together constituted a hidden hand by which the individual's action in quest for his own advantage tended to maximise the economic welfare of society. This is not the whole of Adam Smith, but it is certainly a very central part of him. Walras, subject to all necessary reservations, proved the point with a thoroughness never before achieved or subsequently bettered. He worked on the assumption of perfect competition in the strict sense. The corollary is that we may take what would be the outcome of a system of perfect competition as a criterion, by their likeness to or difference from which we may test the outcomes of other systems. This demonstration was certainly something that needed doing, and may be said to have been done by Walras once and for all. He places himself in this light by some sentences in the introduction to his fourth edition (pp. 47–8):

> "It took from a hundred to a hundred and fifty or two hundred years for the astronomy of Kepler to become the astronomy of Newton and Laplace, and for the mechanics of Galileo to become the mechanics of d'Alembert and Lagrange. On the other hand, less than a century has elapsed between the publication of Adam Smith's work and the contributions of Cournot, Gossen, Jevons and myself." [1]

If one regards Walras' essential task as giving the complete, final and polished proof of Adam Smith's central theorem, then it would seem to follow that he should be accorded a status in the history of economics, not on a level with a great pioneer like J. M. Keynes, but rather one similar to that occupied by his father, J. N. Keynes, in the history of logic. J. N. Keynes gave a far more complete and highly polished account of syllogistic logic than had been given before, and one which is not likely to be improved on. (In fairness to J. N. Keynes one must add that his lucidity and presentation were much superior to those of Walras.)

[1] Menger is not in this list, because his work was not mathematical, and it is to the mathematical presentation that Walras attaches first importance.

This may not, however, be the last word. We have to ask whether it was not the case that, in order to establish Adam Smith's theorem on so firm a foundation, Walras did not have to devise new tools, which might be considered as great contributions to economic thinking in their own right. Here we are concerned with: (i) his mathematical formulations, and (ii) marginalism. Of the former I shall say something presently; I cannot believe that in themselves they are very momentous. The crucial, and indeed controversial, question is that of marginalism.

The idea of applying the marginal principle to economic matters certainly does seem to be of first-rate importance. Credit for this must go to Ricardo and his predecessors, who applied it in part correctly, in part erroneously. Ricardo gave wide notoriety to the technique. However, it was not applied in the early days to utility, save by certain writers whose ideas did not permeate; and conceptual confusion about the relation of utility to value in exchange persisted. How deep did the confusion go? Did it go so deep as to render nonsensical all the arguments of the early classical economists purporting to show that competition and free trade were conducive to welfare? Or was the correct relation between utility and value implicit in their thinking all the time? Was it merely a nicely articulated formulation that was lacking?

When Jevons' *Theory* first appeared (1871), Marshall reviewed it in *The Academy*. In his opening paragraph he wrote (quoting Jevons):

> " Though ' labour is often found to determine value,' it yet does so ' only in an indirect manner by varying the degree of the utility of the commodity through an increase in the supply.' Bearing in mind what has been said about prospective utility, it is almost startling to find that the author regards the Ricardian theory as maintaining labour to be the origin of value in a sense inconsistent with this last position. But the language of Ricardo on this point was loose with system: and that of many of his more prominent followers differs from his only in that its looseness is not systematic. By a natural reaction, attempts have been made by a series of able men to found the theory of value exclusively upon the neglected truth. Although the difference between the two sets of theories is of great importance, it is mainly a difference in form. We may, for instance, read far into the present book without finding any important proposition which is new in substance."

When at length an important proposition appears, Marshall criticises it as confused, on the ground that it does not recognise the interdependence of supply and demand.

The *Theory* appeared and the review was written before the first edition of the *Elements*. Marshall's line is that the part played by demand is implicit in the classical writers, but he recognises that it was insufficiently stressed. To emphasise it with the aid of the marginal principle was useful; but Marshall thought that Jevons made too much fuss, and overstated its novelty. This would apply to Walras equally.

I venture to make a personal digression, because it may afford a kind of

laboratory experiment which is not usually available. At the age of fifteen I read J. S. Mill's *Principles* and took the tools there furnished for my own thinking. In the following seven years I read rather widely in economics. Memory throws up as flotsam and jetsam the names of Bagehot, Giffen, Toynbee, Barbour, Karl Marx, Kropotkin, Cole, Keynes, Cassel (on monetary questions). During those seven years, I thought much about economic questions, discussed much, perhaps with the modesty appropriate to a tyro, more probably with the immodesty appropriate to youth, and judged and criticised current economic policies. Eventually I came to be well versed in the classic blue books on money and finance, knew much of the controversies relating to inconvertibility in the Napoleonic period, Peel's Bank Act, bimetallism, the rupee, free trade, and local and public finance, and I knew Marshall's contributions as a witness before successive Royal Commissions (later published in a separate volume: *Official Papers*) rather intimately. But I had never read Marshall's *Principles*—nor Menger, nor Walras, nor Jevons' *Theory* (although I had read his *Investigations*); I did not do so until the age of twenty-two. It is curious to look back upon these seven years of intense intellectual life in matters economic—pre-natal years, one might almost call them. I believe it must be quite rare for anyone of my age-group to have come to Marshall's *Principles* after so long a period of active interest and wide reading in economics of a kind by no means superficial.

When I came to the *Principles*, I was naturally deeply impressed. I was struck by the lucidity of exposition, the grave thoughtfulness, the sureness of touch, the architectural quality of the book as a whole, the firmness of the skeleton of abstract thought underlying it, the immense pains taken to relate the abstract concepts to the actual phenomena of the world in which we live, the justice done to various points of view, the careful reservations, the nuances, the subtlety and that comprehensiveness which has so often enabled subsequent generations of teachers to prove to some giddy young enthusiast for a new idea that it was in Marshall all the time. But what I do not recall thinking was that my economic speculations during the preceding seven years, which had relied for pure theory almost exclusively on Mill, had been all wrong, or that the gaps in it were very wide and large. I do not think that Marshall would have been shocked by that. Of course, one realised that one had not fully appreciated the fertility of the marginal principle. But I certainly had the feeling that its applications had been to some extent implicit in my mind, although not properly formulated. I was more struck by other novelties in Marshall: his treatment of the long and short periods—Walras' remarks on overhead costs (p. 438) are by contrast very superficial—of quasi-rent, of the representative firm, of increasing returns and those allied matters which in due course led one to think more deeply about imperfect competition. Very different was my feeling of new horizons opening up before me when Keynes began to expound his new model some dozen years later.

Almost all those general qualities that made Marshall's *Principles* a great classic, despite the fact that its original contributions to pure theory are

admittedly limited,[1] are lacking in Walras. He had little regard for the actual phenomena of our economic life, no comprehensiveness, few reservations and little nuance or subtlety. The presentation is extremely clumsy. There is fierce concentration on a single point. Professor Jaffé compares it to " a penetrating pencil of esoteric rays serviceable only to specialists to whom it gradually revealed a clear design of organic unity inherent in socio-economic phenomena." But this was none other than Adam Smith's design. Walras gave precise, explicit and mathematical formulation to thoughts already implicit. To do this was an important task, and it was accomplished with thoroughness and some distinction. Precise formulation is always an advantage, and the power to make it in economics sometimes demands rare intellectual quality. But I would add that the advancement of economics depends on rather different qualities.

A non-mathematician must be diffident in commenting on Walras' mathematics. They strike me as clumsy and tortuous. The theory of exchange of commodities for one another (namely before bringing production and factor prices into account) occupies 128 long (and exceedingly dreary) pages. I had supposed that elegance and economy were regarded as virtues by mathematicians; in these Walras is totally lacking. In the preface to the first edition he wrote, " I am well aware that the notations used will at first appear somewhat cumbersome; but I beg the reader not to be discouraged by this complexity, for it is inherent in the subject." An alternative view is that the cumbersomeness is inherent in the author.

On the other hand, praise must be given to Walras for insisting that economic theory is essentially a mathematical subject and that points at issue may often be capable of being settled only by mathematical techniques. He had to encounter resistance from the literary school. Edgeworth was vehemently insisting on the same point in the same period, and Marshall was engaging in mathematical excursions also, but was more discrete about them. His discretion in that respect was not necessarily praiseworthy. The place of mathematics in economics is now secure.

Indeed, a caution in the opposite sense may be in place. The more recent influence of Walras may not be wholly to the good in this matter. Theoretical economists sometimes present a long list of assumptions with the air of someone laying the dinner-table; in their minds the meal is to consist in the manipulation of the formulæ expressing the assumptions. In economics the choice of appropriate assumptions is often the more important of the two stages. The assumption of perfect competition was no doubt appropriate and worth making for Walras' strictly limited and clearly defined task. We must balance that by saying that his apologists do not always show appreciation of how strictly limited that task was.

Another example may be given. Few subjects are treated in this very long book (483 lengthy pages excluding editorial matter). Its central theme is the interdependent equilibrium of factor and commodity prices. Accord-

[1] Cf. the very fair account given by J. M. Keynes in his Memoir (ECONOMIC JOURNAL, Vol. XXXIV, September 1924, pp. 311–72 and *Memorials of Alfred Marshall*, pp. 1–65).

ingly, it would seem that the problem of the supply schedules of the factors is rather central to the discussion and worthy of some elucidation. We may raise the question expressed in modern terminology by asking if we should expect the supply schedules to be "forward sloping" or "backward sloping." Walras holds, with scarcely any supporting argument, that they will be forward sloping in the early range of low prices for factors and, having reached at least one maximum (of quantity of factor offered), become backward sloping towards zero (pp. 249–50). This apparently rests in the first instance on the inexpugnable proposition that if a zero price (say, wage) is offered no supply will be forthcoming. But the forward slope in the range of low wages seems to have no better foundation than the quest for a continuous curve. But this is altogether too cavalier a treatment. This cannot be reckoned a trivial point, especially having regard to the extremely narrow range of Walras' theoretical interests. He was just bemused by his own equations. This prime exponent of mathematical treatment, and of the danger of thinking one can rest in a theoretical conclusion without applying a mathematical test, gives an excellent example here of the dangers that beset an economist who relies too much on mathematics.[1] Walras deals in a separate passage with the supply curve of saving (which is not reckoned by him as one of the ultimate factors). If Professor Jaffé's interpretation is correct, above a certain critical rate of interest the supply curve is forward sloping and then, having reached a maximum, becomes backward sloping for still higher rates (p. 275 and note 11). All this is merely subordinate to the exigencies of continuous-curve drawing.

Walras' general theory of commodity and factor prices will already be familiar to readers; for it is nothing less than what may be called *the* theory of commodity and factor prices, as purveyed in any respectable text-book to-day. That is Walras triumphant!

He has an interesting, but obscure and tortured, passage on capital formation. Keynes had no business to say that he could find no coherent theory of interest in classical economics. Walras' theory is, of course, governed by the assumption of full employment (*i.e.*, no "involuntary" unemployment in Keynes' sense), which is made throughout the volume. He not only shows how equilibrium is achieved between savings and investment in general, but also integrates this theory with a theory of how equilibrium is achieved between the cost of production of, and the demand for, each particular capital good. The trouble is not that the theory is lacking in consistency and coherence, but that it is so anæmic. It is postulated that we may desire a slab of permanent income (or of less than permanent income);

[1] I once attempted a heroic generalisation of the kind made by Walras. I argued that in the range of wages between a subsistence level and affluence the supply curve must, *on average*, be predominantly backward sloping. My postulate would coincide with that of Walras, if one assumed that the range in which, according to him, the supply curve was forward sloping was that in which, while the labourer was offered more food than none at all, he yet was not offered enough to sustain life on. It would be interesting to know if that was the range which Walras had in mind for his forward-sloping curve (R. F. Harrod, "Progressive Taxation and Equal Sacrifice", Economic Journal, Vol. XL, No. 160, December 1930, pp. 704–7).

the strength of desire is a decreasing function of the number of slabs proposed. That is all he has to say about the propensity to save. There is nothing about the telescopic faculty, nothing about the desire to equalise the marginal utility of income through time, nothing about the possible need of capital in future to educate one's children, or to provide for old age or for contingencies, nothing about the distribution of income or other factors affecting the source of savings. No considerations are adduced. Here, as throughout the book, the treatment is exceedingly thin—very " pure " indeed. It is really extraordinary how little of the substantial matters with which economists are concerned are touched on in this famous treatise.

The section on money, however, has much more body than the rest. It was enriched during the course of successive editions between 1874 and 1900. Here we have the concept of a desired cash balance, measured by its power to purchase goods. This is in line with the thought which Marshall was developing in about the same period, and which was published by his pupils much later.[1] Walras' desired cash balance corresponds to the magnitude designated by the symbol k in the formulations of what used to be known as the Cambridge version of the quantity theory. But Walras has a much fuller elaboration of this concept than can be found in the Cambridge exposés. Furthermore, he distinguishes between the cash required by consumers, that required by producers and that required for money savings. One might almost be tempted to find a distant family resemblance between this threefold classification and Keynes' transactions, precautionary and speculative motives. Moreover, the theory of the general price level is fully integrated with the theory of interest, and the monetary theory of interest with the more general theory of interest. But the whole account is, once again, subject to the assumption of full employment. This section is certainly powerful, although wretchedly presented, and should comfort Walras' more fervent admirers.

He was taken to task by Edgeworth for holding that entrepreneurs in equilibrium make neither profit nor loss (p. 225).[2] It is not clear whether his concept of equilibrium precludes all uncertainty about the future.

Mention should be made of his criticism of British economists. His refutation of the Ricardian law of rent, in the form that " rent does not enter into the cost of production," is classic and universally accepted. This alone, it must gladly be conceded, gives Walras a very high place. His treatment may indeed be thought of as a refutation, as he named it; alternatively, it may be thought of as an extension of Ricardo's law to cover all factors of production, in which guise it becomes the marginal productivity theory. Attention should be drawn to an excellent passage (pp. 400–1) in another chapter, where a sharp distinction is made between the phenomenon of high payments due to monopoly and that of high payments due to the

[1] Cf. A. C. Pigou, " The Value of Legal Tender Money," *Quarterly Journal of Economics*, November 1917. J. M. Keynes, *A Tract on Monetary Reform*, pp. 74–87.

[2] Edgeworth, *Quarterly Journal of Economics*, February 1904 (*Papers Relating to Political Economy*, pp. 25–31).

specificity of certain factors for the production of certain products. (The latter are defined as economic rents by Mrs. Robinson in her volume on Imperfect Competition.) There has recently been a tendency to confuse monopoly revenue with economic rent *in this sense*.

On the other hand, his refutation of the English theory of wages (the "wages-fund theory") is less successful, depending on an inadequate representation of that theory. The wages-fund theory, properly defined, is a self-identical proposition, like the quantity theory of money. It cannot be "refuted"; the most that criticism can achieve is to show that this particular self-evident proposition does not provide a helpful approach to the subject. In fact, it may be unhelpful in a mature economy, while retaining its importance in relation to under-developed countries. Even Russia appears to have suffered from time to time since the Revolution by paying inadequate regard to it. For development technological know-how is not enough; a wages fund to tide over the period of high investment is also needed, if a depression in real wages is to be avoided.

Walras is sometimes thought of as the very type and epitome of the *laissez-faire* school. Such a notion may be encouraged by the concluding sentences of Part II:

> "The law of supply and demand regulates all these exchanges of commodities just as the law of universal gravitation regulates the movement of all celestial bodies. Thus the system of the economic universe reveals itself, at last, in all its grandeur and complexity: a system at once vast and simple, which, for sheer beauty, resembles the astronomic universe."

But in his own person he conceived himself to be at odds with the extreme school of *laissez-faire*, particularly that of France, and sometimes expostulates petulantly against it. In a notable passage (pp. 75–80) he draws a distinction between the laws of production and exchange, which spring, so to say, from the very nature of things, and principles relating to distribution which depend upon the will of man and should be guided by considerations of justice. This distinction has a strikingly close resemblance to that made by Mill, which had such important influence on Mill's own thinking and on that of others. Walras does not, however, express indebtedness to Mill.

In the early classical thought static and dynamic elements were intermingled. From the treatises and text-books of theory during the last three-quarters of a century the dynamic elements seem largely to have disappeared. Walras concentrated his attention on a single aspect. The main interest of his treatment relates to welfare economics: the proposition that perfect competition tends to bring about an optimum position. The results of his great labours for factual economics are meagre; we only reach such propositions as that there is an equilibrium position and that an increase in demand tends to raise price. Walras was perfectly justified in concentrating his interest and labour in this manner. The harmful influence that his work may have exerted springs from the gloss that what is to be found in his *Elements* constitutes the main corpus of economic theory. Marshall has far

greater scope and depth than Walras. But he, too, in his work on principles, concentrated on the static equilibrium; he did not live long enough to write out even an intelligible summary of what may have originally been in his mind for his fourth volume.[1] The consequence has been the neglect of dynamics for too long a period.

Walras fully recognises the static character of his system. He makes occasional references to dynamics. " Had I supposed utility to be a variable functionally related to time, then time would have had to figure explicitly in the problem. And we should then have passed from economic *statics* to economic *dynamics* " (p. 117).

> " We shall describe equilibrium in principle. . . . Our economy will then be ready to function, and we shall be in a position, if we so desire, to pass from the static to the *dynamic* point of view. In order to make this transition we need only suppose the data of the problem, viz., the quantities possessed, the utility or want curves, etc., to vary as a function of *time*. The *fixed* equilibrium will then be transformed into a *variable* or *moving* equilibrium, which re-establishes itself automatically as soon as it is disturbed. In the theory of bimetallism we find an equilibrium of this kind " (p. 218).

These are excellent statements. There follows a reference to dynamics which appears much less satisfactory, but perhaps only because its meaning is not clear. " A *dynamic* phase in which equilibrium is constantly being disturbed by changes in the data and is constantly being re-established " (p. 319). A static or a moving equilibrium may, each or either, have constant disturbances, or they may not; the frequency of disturbance is not the ground of distinction between these two kinds of equilibrium.

There is only one passage (tucked away in his chapter on the Marginal Productivity Theorem: pp. 388–92) where Walras explicitly discusses developments in a progressive economy. The doctrines set out in this sole excursus into dynamics are, surprisingly enough, pure Ricardo!

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[1] I have read some notes preparatory thereto, which were written in his extreme old age; these are not enlightening.

REVIEWS

The Cost of the National Health Service in England and Wales. By B. ABEL-SMITH and R. M. TITMUSS. National Institute of Economic and Social Research, Occasional Paper XVIII. (London: Cambridge University Press, 1956. Pp. xx + 172. 27*s.* 6*d.*)

WHEN its appointment was first announced, it seemed that the Guillebaud Committee was expected to make another Geddes or May Report. It was "to review the present and prospective cost of the National Health Service . . . to advise how, in view of the burdens on the Exchequer, a rising charge upon it can be avoided while providing for the maintenance of an adequate Service." There had been unprecedentedly large Supplementary Estimates for the Service in 1949 and 1950. In the latter year Sir Stafford Cripps had insisted that in future there must be a "ceiling" upon Exchequer expenditure upon the Service. To fulfil this requirement, "charges" for dentures and spectacles were levied upon patients in 1951. Further "charges" were inposed in 1952. Yet the Estimates rose again in 1953. The appointment of the Committee in that year indicated that the Treasury was making another effort to call a halt.

Fortunately, the Trades Union Congress refused to nominate a member to serve on the Committee until assurances were given about its freedom of action. They obtained a "clarification" of the terms of reference, though (presumably to save face) these were not formally changed. Fortunately too, Mr. Guillebaud was an economist, with an economist's understanding of the meaning of "cost." He invited the National Institute of Economic and Social Research to prepare an economic analysis of the costs of the Service. Fortunately, the Institute chose Professor Titmuss and Dr. Abel-Smith to make this study. As a result, the nation has received not only a warning that continuous pressure by the Treasury on successive Ministers of Health has been causing a dangerous run-down in the capital equipment of the Service, but a brilliant illumination of what the service is and does, and of how it can be maintained and improved in the future without any serious increase in its real demands upon national resources.

No doubt there was some waste in the Service in its early days—Hospital Boards had power to spend public money without responsibility either for raising it or for justifying their stewardship to electors; there was over-prescribing; and the salesmen of drugs and dental goods did well. But the total of such excess can have amounted only to a small proportion of the whole expenditure; and by 1951 most of it had been effectively checked through the various controls established by Ministers with the co-operation of the National Health Services Council. In the main, the increase in monetary expenditure was due partly to expansion and improvement of the

Service and largely to the general inflationary rise of prices throughout the economy.

The authors of this book have carried out an immensely useful and very skilful exercise in reinterpreting the official accounts of the Service so as to ascertain accurately what call it makes upon national resources. They find that " expressed as a proportion of total national resources the current net cost of the Service fell from $3\frac{3}{4}\%$ in 1949/50 to $3\frac{1}{4}\%$ in 1953/4."

It might be thought that this decline in *proportion* of resources devoted to the Service could be regarded with some complacency since the *total* of resources increased substantially in the same period: indeed, the authors show that " the cost per head at constant prices was almost exactly the same in 1953/4 as in 1949/50." But " the rate of capital expenditure in real terms has progressively declined." Moreover, " the rate of fixed capital expenditure on hospitals has averaged about one-third of the pre-war rate in real terms." It is well known that little or no provision of hospital facilities has so far been made in the new towns and new housing estates in which a considerable proportion of our population now lives. The conclusion is inescapable: that the Service is now less than " adequate." As the Guillebaud Committee has rejected any suggestion of further relief of the tax-payer by increasing " charges " upon patients, it follows that if " adequacy " is to be achieved the " rising charge " upon the Exchequer must continue. The Treasury doctrine of the " ceiling " has been demolished. But the effect of the Report and of this book, from which so many of its principal findings were derived, is not merely negative. Misconceptions have been removed, and the way is clear for the adoption of true social accounting.

Looking to the future, Messrs. Titmuss and Abel-Smith have used a statistical tool which has never been employed—nor, so far as I know, even thought of—before. They have analysed the hospital population of Census Night, 1951, and have used this to examine (and to some extent to predict) the " demand for hospital care." They find, for example, that " the bulk of the population of mental and ' chronic ' hospitals are single people " and that " the married state appears to be a powerful safeguard against admission to hospitals in general and to mental and ' chronic ' hospitals in particular." Moreover, " a higher proportion of the cost of the National Health Service is devoted to the medical care of the under-fifteen age groups (including confinements) than to the medical care of persons aged sixty-five and over." Relating these facts to anticipated changes in the size and make-up of the population in future " it can thus be seen that among the group of old people who make the largest demands for in-patient care (single men and women) there is not likely to be any material increase in the population at risk during the next twenty-five years," while of course the numbers of children are likely to be less. This suggests that the future demand for medical care is not likely to increase to anything like the same extent as had been thought. One would like to know how far Dr. Ffrangcon Roberts would be influenced by these statistical findings to modify the interesting

conclusions about the association of old age with ill health which he expounded in *The Cost of Health.*

Examination of the Registrar-General's *Hospital In-patients Statistics for 1949* suggests to the authors that " professional and middle-class men of these ages (25–64) are making full use of National Health Service hospitals, whereas the semi-skilled and unskilled groups are making fewer demands than might have been expected from their relatively higher mortality experience." Taking other " scattered pieces of evidence " into account, " it would seem that in general and for many particular conditions which do not constitute a grave threat to life, the professional and middle classes are keener to go to their doctors and to hospital in the early or premonitory stages of disease; are more disposed to have vague symptoms investigated in hospital, and adopt a more positive attitude to elective surgery or other treatment for relatively minor conditions such as sinusitis." One wonders how far " demand " by the patient may account for these differences or whether, even within a nationalised service, there may still exist some degree (conscious or unconscious) of class preference in hospital admissions. Possibly in future—for one reason or another, including greater ability to " afford " the loss of earnings during a stay in hospital, the pattern of " demand " by working-class citizens may so change that the nation's total requirement of hospital facilities may increase faster than the authors' demographic calculations would suggest. Certainly one can agree with them that " much more research needs to be done before any definite conclusions could be drawn." This book has not only shown the need for that research, it has done pioneer work of first-class quality in showing how to conduct it.

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A Geometry of International Trade. By J. E. MEADE. (London: Allen & Unwin, 1952. Pp. 112. 28*s.*)

THERE has long been a need for a systematic exposition of the basic geometry which has come to be employed in the analysis of general equilibrium in international trade. This book goes a long way towards meeting that need—not all the way, because Professor Meade's long-standing concern with international economic policy and welfare problems has led him to omit entirely the contract-box analysis of the effects of trade on factor allocation and rewards (which is made uninteresting by the assumptions necessary for welfare analysis). On the other hand, Professor Meade has contributed to the geometrical analysis a much improved method of allowing for production variations, a less arbitrary treatment of the expenditure of tax proceeds (and the financing of subsidies) and a treatment of trade imbalance (*i.e.*, transfers). Rather less happily, in view of his prefatory remarks on the usefulness of simplification, he combines all these techniques, together with an arbitrary and questionable assumption which permits discussion of the exchange rate, in a complicated analysis of a " general case " involving import and export duties in both countries and a trade imbalance.

Professor Meade begins with a short statement of the assumptions usually made in geometrical analysis, together with a list of those he intends to relax. He then develops his major contribution, the trade indifference map, derived from consumption indifference curves by sliding the transformation curve along them; the usefulness of this contribution, which at once permits generalisation of many existing results to cases of variable production and clarifies some classical confusions, has already been acknowledged in the literature. While the author normally assumes absence of external economies and diseconomies and increasing (social) costs, two chapters are devoted to constant and decreasing costs; the latter, rather surprisingly, credits R. C. O. Matthews with the discussion of stability conditions but fails to mention the latter's major point that in this case a country may be worse off with trade than without (indeed, Professor Meade's and others' methods can be used to show the possibility that *both* countries can be worse off with trade than without—a proposition with some application to the familiar " infant-industries " argument).

Over a third of the book is then devoted to a chapter on the geometrical representation of commercial policy with a zero trade balance—not an excessive amount of space, since Professor Meade deals with eight " simple " policies (export and import taxes and subsidies in both countries), is concerned with their effects on four price ratios (internal prices, net barter terms of trade, and the exchange rate) and expounds Professor Lerner's technique before presenting his own contribution, which consists in treating the fiscal aspects of taxes and subsidies on trade as equivalent to income subsidies and taxes. He also deals with state trading, the optimum tariff and the Metzler analysis of the effects of protection on domestic production (which loses some of its point when the distributional effects are ignored). This is probably the most thorough geometrical analysis of commercial policy available anywhere—though it might perhaps have been mentioned that Professor Meade's technique excludes certain cases possible on the Lerner assumption, notably that a tariff may turn a country's terms of trade against it if its demand for imports is inelastic and the government has a greater preference for imports than the general public.

A more important criticism, however, can be directed against the introduction of the exchange rate, which in a real model of this type requires an arbitrary assumption about domestic currency prices. The only geometrically manageable assumption is that one money price is pegged in each country, and this hardly provides an interesting case for analysis; unfortunately, it greatly complicates the argument by requiring a distinction between export and import duties, which could otherwise be dealt with together as " a trade tax." In addition, Professor Meade's assumption (stabilisation of the factor-cost prices of exports) is discussed with uncharacteristic obscurity, imposing a severe burden on the reader's intuition or reasoning powers. His statement that " the rate of exchange is thus the ratio between the untaxed–unsubsidised price of B-exportables in B and the untaxed–unsubsidised price of A-exportables in A " (p. 47) is an obvious nonsensical slip. [Professor

Meade has since informed the reviewer that what he meant to write was that the rate of exchange between the two currencies will move in exactly the same way as would the terms of trade between the two products if they exchanged at their domestic untaxed–unsubsidised prices.] Understanding of Professor Meade's analysis of the exchange rate may be facilitated by the following precise statement of the effects of his assumption about money prices: on condition that exports are measured in currency-units of factor cost, the exchange rate, defined as the number of units of A's currency required to buy a unit of B's, will be *both* equal to the real (cost) price of B-exportables in B multiplied by one plus the total tax on A-exportables (expressed as a proportion of their factor cost) *and* the reciprocal of the real (cost) price of A-exportables in A multiplied by one plus the total tax on B-exportables (expressed as a proportion of their factor cost).

From the representation of commercial policy with trade balance, Professor Meade proceeds to the representation of imbalance under free trade, and its effects on price ratios (including both gross and net barter terms of trade). This chapter neatly demonstrates the equivalence of imbalance and transfer problems; one regrets only that Professor Meade has not repeated and developed a point made in the *Mathematical Supplement* to Volume I of *The Balance of Payments*, that the stability criterion may be expressed in terms of the demand for one of the commodities. The techniques for dealing with commercial policy and trade imbalance are then combined in a brief chapter dealing with "The General Case," and the book concludes with a few pages on alternative welfare criteria and a plea for striving to maximise world real income.

Taken as a whole, this book should prove a useful and lasting contribution to the pure theory of international trade, providing a consolidation and improvement of techniques from which further analysis can proceed without waste effort—even though few may wish to deal simultaneously with all the complexities of Professor Meade's general case. There are a number of ways in which one would like to see the book extended: for example, to include extant bits of geometry useful for special purposes, such as the production contract-box, Baldwin's technique for incorporating trade opportunities in the production frontier and the devices of various writers for dealing with more commodities and countries; more ambitiously, to include new techniques for dealing with such neglected problems as transport costs (an analogy from the Lerner technique suggests itself), non-constant returns to scale in individual industries and imperfect competition. But this is to ask for a larger and more unwieldy book than Professor Meade has set out to write.

It should be added that the fifty-one diagrams are printed separately from the text and are conveniently detachable, and that remarkably few misprints impede the course of the geometrical argument.

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The Analysis of Family Budgets. By S. J. PRAIS and H. S. HOUTHAKKER. Department of Applied Economics, University of Cambridge, Monograph No. 4. (London: Cambridge University Press, 1955. Pp. xx + 372. 50*s*.)

THIS work is essentially a sequel to the study carried out more than twenty years ago by Allen and Bowley, and the authors fully acknowledge their indebtedness to this pioneer monograph on family expenditure—a debt which, moreover, is evident in every phase of the present analysis. But in the interval the technical equipment at the disposal of the statistical analyst has improved out of all recognition. The authors, who pursued their researches in the Department of Applied Economics in Cambridge, had at their disposal an electronic computor, and were thus able to attempt a feat of econometric analysis that two decades earlier would have been quite beyond the powers of the most industrious research worker.

The statistical material on which their study is based was provided by two pre-war sample inquiries: that of the Ministry of Labour into working-class household expenditure in 1937–38 and that undertaken by the Civil Service Statistical and Research Bureau into the income and expenditure of middle-class households in 1938–39. The working-class sample is represented by data from 2,219 households with 3·80 persons per family and the middle-class sample by data from 1,361 households with 3·26 persons per family.

Even allowing for the substantial technical assistance which they could command, the sheer amount of detailed work that the authors have put into this book must evoke admiration. But it is much more than a monument of ant-like industry. They have plunged into their work with obvious gusto, and have produced a piece of research which is not only ingenious in its conception but which, in exposition and treatment alike, will be found interesting and even exciting by many workers in this field. Its centre-piece is a discussion of Engel's law and its interpretation in precise terms when applied to large samples. The law was defined in the study by Allen and Bowley by the equation $y = \alpha + \beta x$, and although they pointed out that this linear form could be taken only as a first approximation of the function expressing specific expenditure as a variable of income, they found that within the limits of their samples—all of which covered relatively narrow income ranges—it gave a satisfactory fit. Distinct indications of non-linear relationships became evident only in the upper regions of expenditure and income, occupied by a few stray cases of doubtful significance for the samples considered. The ranges of the two samples utilised by the authors of the present work are, however, wide; even if the "fringes" are disregarded, the total expenditure of the households of their working-class sample as well as of their middle-class sample extends, in each case, over a range of about fivefold spread, which for the samples combined becomes about eightfold. If expenditure per household is replaced by expenditure per person, this range is still wider, with a lower limit of about £20 per annum and an upper

limit of about £200. Thus it was hardly to be expected that these samples would adapt themselves to a linear presentation—even assuming that they were homogeneous or amenable to being adjusted so as to eliminate, or subdue, the most disturbing heterogeneous factors.

The authors set out on a trail of econometric detection. After a critical discussion and comparison of various possible equations that suggested themselves, they present for their combined samples continuous functions of expenditure on food, and on certain non-food items, in the semi-logarithmic form $y = \alpha + \beta \log x$, which implies that income elasticity is inversely proportional to the level of consumption. In the cases of fuel and lighting, household durables and "literary activities," they prefer the logarithmic form $\log y = \alpha + \beta \log x$, implying constant income elasticity, because it gives the better fit. These curves, related to total expenditure per person, are essentially descriptive. Within the wide limits and loose structure of the combined samples—which not only embrace an extensive cross-section of social strata but also, within this cross-section, extend in time—the assumption that for the food groups (there are fifty-nine of them) and for some non-food items income elasticity is inversely proportional to the level of consumption, while for some other items it is constant, would indeed seem to provide working hypotheses.

The value of this for forecasting consumers' behaviour is difficult to appraise, in view of the complexity of the sampling data employed. However, the authors, although naturally optimistic about the practical value of their findings, are careful to make no exaggerated claims for them; on the contrary, they point out in considerable detail a number of shortcomings and possible objections. Furthermore, they suggest and introduce a variety of ways in which the sampling data can be improved. Prices, which for a sample encompassed within a narrow income range might be treated as invariable and therefore disregarded, are certainly variable with respect to most items in any extensive sample of household accounts, and related to both the structure of the household and its total expenditure, or income. In order to allow for this, a "quality" equation $p = \gamma + \delta \log \frac{x}{n}$ is proposed (where p stands for price and n for the number of persons). Since the product of price and quantity is given by the expenditure function, this easily transforms into a "quantity" equation, which might yield a gauge for comparing relative standards of living. As could be expected, the authors found their Engel "consumption" curves to flatten out in the higher expenditure ranges considerably more than their expenditure curves.

A further refinement, and a highly ingenious one—made possible by the employment of the electronic computor—is the introduction of a unit-consumer scale, evolved from the expenditure pattern of the different types of families for the various items. The authors suggest a weighted index of consumption for each family, dependent on family structure and family expenditure on the several groups of items; they have, in fact, confined their analysis on this basis to the food consumption data provided by the working-

class sample. The behaviour scales thus computed are not unconvincing, even though the underlying equations derive from the assumption that the relative weights for expenditure on food are reflected in the corresponding income (or total expenditure) consumer-unit scales.

The two concluding chapters discuss tentatively, but with considerable discernment, the implications of possible economies of scale, and of social, occupational and regional factors, for the analysis and interpretation of statistics of family consumption. The remainder of the volume—over half of it—is taken up by detailed cross-tabulations of the sampling data employed by the authors.

In spite of the considerable amount of precise and detailed work that has gone into this book, it is in many parts sketchy. The authors' enthusiasm and ingenuity carry the reader along; yet intermittently he may wonder how much solidity the samples employed can infuse into this lofty mathematical structure. But after such moments he will usually either be brought down safely on to solid ground by a common-sense discussion of the technical difficulties inherent in the collection and analysis of household accounts or else he will be stimulated afresh to follow the authors' exploits, by the exhilarating character of the mathematical enterprise.

Two specific complaints, however, must be made. The first is a minor one: the reader is presented with a tiresome puzzle by the authors' failure to indicate the units employed in their equations for expenditure on food; it appears that these are, for total expenditure, £s per year, and for specific expenditure, pence per week—a somewhat strange juxtaposition. Secondly, it would have been advisable to shun the term "income" when the data referred to are actually those of total expenditure, and to use some more objective expression, such as "outlay." It is true that the monograph by Allen and Bowley also took total expenditure as the independent variable, dubbing it "income"; but in the case of these small and (in essential characteristics) supposedly homogeneous samples, this was a less questionable assumption than it is for such large and undoubtedly diffuse samples. The authors, however, had no option but to make it, since income figures—and these incomplete ones—were available only for the middle-class families; but its implications for their whole argument are too serious to be glossed over.

But in general the authors are unbiased critics of their own work; and by candidly pointing out many of the weak spots, and exposing the loose ends, of their study, they not only largely disarm adverse comment but are also helping the reader towards a full appreciation of the substance of their research.

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An Econometric Model of the United States, 1929–1952. By L. R. KLEIN and A. S. GOLDBERGER. Contributions to Economic Analysis, IX. (Amsterdam: North Holland Publishing Company, 1955. Pp. xv + 165. 34*s*.)

IN 1950 Dr. Klein published his study of *Economic Fluctuations in the United States 1921–41*, which was the first extensive application of the econometric methods developed at the Cowles Commission for Research in Economics, then working at the University of Chicago. At that date it was clear, as Dr. Klein stated in the preface to that monograph, that as yet " only tentative and preliminary steps in econometric model building " had been undertaken and that further exploratory work was necessary before a satisfactory model would be available. The present study describes the results of a further three years' work on the ambitious task of estimating an econometric model for the United States: its findings are clearly of first importance for all interested in forecasting the economic weather.

At a first reading the book appears admirable in its conciseness and readability. There is an Introduction on the virtues of learning from experience; a chapter setting out the main relationships in the model and, to one's pleasant surprise, avoiding the familiar tedium of deriving everything from the most general of first principles; a chapter on the system as a whole; a chapter on the statistical estimates, complete with diagrams showing the fits of each of the equations to the observations; this is followed by some forecasts from the model and, finally, there is a revision of the model (termed here the Revised model in contrast to the Main model) to take into account later data. But the reader who is sufficiently interested to go through the work a second time will find that a price has been paid for the brevity of the exposition: in order to discover the improvements in the model he will have to refer to *Economic Fluctuations* and make the comparisons for himself, and if he is interested in the way the cross-sectional and time series estimates of the propensity to consume have been combined, he will have to refer to a third publication. In addition, more comment would have been in order on the reasons for the changes introduced in this model and some hints on changes which may be desirable in future work.

The period covered in the present study consists of the pre-war years 1929–41; together with the post-war years 1946–50 in the Main model, and the years 1946–52 in the Revised model. These two models are thus respectively based on eighteen and twenty annual observations, as compared with the twenty-one observations for the years 1921–41 in the Original model (as it will be termed here) of *Economic Fluctuations*. It seems a pity that the years 1921–28 are now omitted; the reason given is that they are not available on the revised basis issued by the Department of Commerce in 1951, but it should not have been too difficult to find some method of splicing the old and new series together to make use of the experience of the twenties.

The main changes introduced in the system of equations are the entire omission of the house building and rental sector, which took four out of the

twelve equations in the Original model, and their replacement by equations to explain the absolute level of prices and other money-market variables. In these new models there is a total of fifteen equations which are estimated from the data, and while all have their points of interest, only two will be mentioned here. First, and undoubtedly of most interest, is the consumption function, which has now become rather more complicated than the constant marginal propensity of 0·73 and the trend term of the Original model. Carl Christ in his (1951) test and revision of the model (published in the N.B.E.R. *Conference on Business Cycles*) had included liquid assets in the function, and a term in the previous year's consumption to allow for the inflexibility of habits; both of these terms are now included in the new models (though the reviewer would prefer total assets to liquid assets, as in the recent work of Modigliani and Brumberg). In addition, income has been split into three components: wages, profits and farm income, so that there are now three marginal propensities to consume—with long-run values estimated at 0·81, 0·60 and 0·51 respectively—instead of the single global propensity used previously. These have been estimated by combining information from family budget data with time series; the relative values of the three propensities have been estimated from the budget data, and their absolute level from the time series. The effects of such a combined method of estimation on the sampling errors of the propensities are not considered; but there can be little doubt that further progress in econometric model building will depend to an increasing extent on the combination of different types of information, whether in this or other ways.

Turning next to the investment equation, we find that gross private investment is now treated as a single variable, the movements of which are made to depend mainly on gross profits; the previous year's value of profits is used in the equation, though this seems to put most of the turning points in the fitted series one year too late. In addition, the estimated equation contains a liquidity term with a positive coefficient, and the stock of capital to which a negative coefficient is attached: neither of these coefficients is statistically significant, so that most statisticians would omit these two variables from the equation on the evidence presented. The relatively brief treatment of such an important sector of the economy in this study contrasts with the four equations for investment in the Original model (one for plant and equipment, another for stocks, and two for housing); the results for the Original model seem to be statistically preferable to the newer efforts, if one may judge from the standard errors given for the single equation estimates. Unfortunately the authors do not comment on these changes.

The other equations are often unexciting. Some are included in a merely formal way to complete the system of mutual determination, and these are especially unsatisfactory; many others have serially correlated residuals which cast doubt on their satisfactoriness. No summary measures of goodness of fit are given for the equations, but standard errors are given for the coefficients.

Perhaps the most serious methodological fault of this study is the absence

of standard errors (or tolerance intervals) for the forecasts made from the model. Since the equations explain the past only to a certain extent, any forecast made from them is subject to uncertainty, the margin of uncertainty depending on the satisfactoriness of the fits in the past. Unless such margins are calculated—and there is a standard procedure for such calculations—it is impossible to judge whether a forecast from the model which turns out to be satisfactory arose just as a matter of chance, or is in fact the proper result of our better understanding of the economic mechanism. The presentation of forecasts in a precise form may give the lay reader an entirely specious impression both of the accuracy of these particular forecasts and of the nature of econometric research in general.

The book, of course, does not pretend to be more than a report on work that is still in progress. As such it will be welcomed by all engaged in similar work in other countries as well as by those who, with its aid, will now wish to make their own predictions of the movements of the U.S. economy.

S. J. PRAIS

Cambridge.

A Study in the Analysis of Stationary Time Series. By HERMAN WOLD. Second Edition with an Appendix by PETER WHITTLE. (Stockholm: Almqvist & Wiksell, 1954. Pp. vii + 236. Sw. kr. 28.)

IN the preface the author states that the main text of his thesis, first published in 1938, is left unchanged (except for minor alterations) in this second edition. Recent developments in topics mentioned in the text proper are dealt with in two appendices, the first by Professor Wold himself, consisting of a number of notes, and the second by Dr. P. Whittle.

In an interesting introductory conspectus the author shows that earlier work on time series was dominated by the search for periodicities by means of periodogram analysis and harmonic series. One of the principal instruments in this approach is the well-known Schuster periodogram $C^2(\lambda)$, a binomial function of the observations with coefficients $\sin \lambda t$ and $\cos \lambda t$. Values of λ which yield peaks in the function graphed against λ indicate periods when regard is had to significance tests, of which the best known is perhaps R. A. Fisher's (1929). The harmonic series is an appropriate introduction to the autoregressive series with which the work mainly deals by the fact that when the time interval is unity the harmonic series is a particular case of the general solution in x_t of

$$\sum_{r=1}^{k} a_r x_{t-r} = 0$$

The autoregressive system comes in through the introduction of a random variable η_t instead of zero on the right side of the equation. The correlogram, *i.e.*, the graph of correlation coefficients $r(x_t, x_{t+k})$ against k, is also dealt with.

A discrete random process is one in which each observation is a random variable extended in time at fixed intervals, which may be taken as unity.

Successive observations may be, and usually are, related: hence, *inter alia*, the phenomenon of serial correlation. Stationary series are those in which the inherent multiple frequency distribution of any set of observations at points of time $t_1, t_2, \ldots, t_h$ is the same as for the observations at $t_1 + t$, $t_2 + t, \ldots, t_h + t$, where all the t are arbitrary. The solution of the autoregressive equation

$$\Sigma a_r x_{t-r} = \eta_t$$

constitutes a stationary process. One attractive theorem proved is that if $r_k (k = 0, \pm 1, \pm 2, \ldots$ *ad inf.*) be an arbitrary sequence of constants, a necessary and sufficient condition that there exists a discrete stationary process with the r_ks as auto-correlation coefficients is that the r_k are Fourier coefficients of a non-decreasing function $W(x)$ so that

$$r_k = \frac{1}{\pi}\int_0^\pi \cos kx \, dW(x),$$

of which an inversion gives

$$W(x) = x + 2\sum_{k=1}^{\infty} \frac{r_k}{k} \sin kx$$

This the author terms the " generating function " of the r_k. It is now more commonly known as the " spectrum." Another important theorem proved is that any discrete stationary process with finite dispersion can be represented as the sum of two processes, one of which is singular (*i.e.*, with a Fourier-type solution) and the other represented by the infinite series

$$\sum_{r=1}^{\infty} b_r \eta_{t-r}$$

where the η_t are non-auto-correlated and have expected values zero, the coefficients b being real and such that Σb^2_r is convergent.

The author uses, as illustrations for analyses, a number of constructed series as well as the Beveridge annual wheat-price series 1770–1869 (previously worked on by Kendall as well as Beveridge), Myrdal's annual Swedish consumer price indices 1840–1913, and extended annual series for the level and rainfall in and about Lake Väner. He is careful to point out that he attaches no objective significance to his results. His applications are merely exercises in method, mainly with a view to determining whether the measured phenomenon can be represented by an autoregressive system of low order, after elimination of trend where necessary. He has perhaps hampered himself in his analytical method by the fact that, as tests of significance had not been much developed at the time the first edition appeared, he has to determine whether the fit is good by appeal " to the eye." Though the Myrdal series yielded a very smooth correlogram, the reviewer must confess that (also to the eye) any of the autoregressive approximations do not seem satisfactory, perhaps an example of the fact, generally accepted nowadays, that no single economic series can be expected to hold within itself the seeds of its own perpetuation, and this is what is implied by the

single autoregressive series. The phenomenon measured is influenced by, and influences, other series, which is why modern research tends to deal not with one equation but with systems of equations. It is true that, confining attention to linear systems, if the number of unknowns equals the number of equations, the general solution for each unknown x_t can be expressed formally as a linear function of the errors, as in the case of the single equation. Even with many variables we are still far from the efficient economic forecasting formula, derived from actual data,

$$y_t = f(x_{1t}, x_{2t}, \ldots) + u_t$$

where f is the forecast desired, y_t what actually transpires and the x_{it} are the predetermined values, which may contain lagged y_ts, and u_t is the error. If the function f is linear and the number of observations large the mathematical problems of efficient estimation and significance-testing may be regarded as solved. The trouble is that in the application of the theory to actual data we cannot be sure that the variance of the residual u_t will be small in relation to the variance of $(y_t - y_{t-1})$. As matters stand, we can be by no means certain that mathematical forecasts yield results which are better than intelligent guesses consistent with the social accounts.

It would appear that in a few instances the exposition would have been simplified by using the now well-known operational method for finding the solution in x_t of the equation

$$\sum_{r=0}^{k} a_r x_{t-r} = \eta_t$$

in the form

$$x_t = \{F^{-1}(D)\}\eta_t$$

where D is the operation $Dz_t = z_{t-1}$ and $F(D) = \Sigma a_r D^r$. This device (to which Dr. Whittle refers at the end of his appendix) at once high-lights the essential role at the roots of the characteristic polynomial $F(z)$ and readily yields the values of the coefficients a in terms of the b, and vice versa. Perhaps the author makes unnecessarily heavy weather with what he terms "forecasts," namely the problem of estimating the variate k time intervals forward. If this estimate be X_{t+k}, he shows that

$$X_{t+k} = \sum_{r=0}^{\infty} b_{k+r}\, \eta_{t-r}$$

Without any recourse to regression methods, this formula could have been anticipated, as X_{t+k} is the value of x_{t+k} in terms of η_s when all the s for $s = t+1$ to $t+k$ inclusive are set at their mean values zero, which seems a sensible thing to do. The expression of X_{t+k} in terms of previous "forecasts" is also a simple matter of substitution. More serious, however, is the objection to the term "forecast" as applied to X_{t+k}, if only because it approaches absolute inefficiency as the interval k increases, as the author shows. It would be better to call X_{t+k} an "extrapolation" or something of the sort.

One must also be a little unhappy about a brief incursion into significance

testing (p. 21). It is surprising to read that the ω^2-method of testing goodness of fit " does not suffer from the well-known arbitrariness implied in the χ^2-method." In the application which the author gives on p. 30 of ω^2 he appeals only to its expected value and not to its probability, whereas using χ^2, the actual probability could have been given with complete confidence.

There are many excellent things in the book. Even though its scope is restricted, since for the greater part it deals with what was known up to 1938, the treatment has the merit of being in the main mathematically rigorous. It therefore represents a consolidation of the theoretical position for the " early modern " period.

Dr. Whittle's appendix is an admirable summary of certain aspects of modern research, including testing of the values of autoregressive approximations to time series for significance. As the author explains, he confined himself to developments which lent themselves to uniform treatment. He very largely makes good the claim that wide inferences as to the nature of the time series can be derived from the spectrum—see above—and its derivative the spectral function, if in one or two applications his man is sent on a boy's errand. In particular, there is a beautiful theorem about the nature of the roots of a particular determinantal equation. Of this and other interesting theory, it is a pity that proofs were not supplied, no doubt because of exigencies of space. The treatment is for the greater part asymptotic (*i.e.*, large sample approximation). One would have wished for a few practical applications, *e.g.*, to determine whether Professor Wold's three- or four-term autoregressions to Myrdal's price data were adequate.

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Finanspolitikens Ekonomiska Teori. By BENT HANSEN. Penningvärdeundersökningen: Del. II. (Uppsala: Almqvist & Wiksell, 1955. Pp. 403.)

IN the early nineteen-thirties the Swedes produced a series of officially sponsored monographs on various problems associated with unemployment, written by some of the members of the now famous " Stockholm School." Now a similar series is being published dealing with the problem of inflation, and it will be interesting and instructive to compare these new works with their distinguished forerunners. The immediately obvious contrast in subject-matter merely reflects the fact that the problems facing both economic policy and theory in the nineteen-fifties are very different from those that the earlier generation had to grapple with. The new committee, set up in 1951 under the general direction of Professor Erik Lundberg, is only incidentally concerned with the maintenance of full employment—its main task is to inquire into the means by which the value of money may be stabilised. The first monograph dealt with foreign-trade problems, and the second, under review here, is entitled " The Economic Theory of Fiscal Policy."

Those who are familiar with Bent Hansen's *Study in the Theory of Inflation*

will recognise the same hand at work here. This is not to suggest that the two works overlap—far from it. In the earlier work great stress was laid upon the interplay of inflationary pressures between the commodity and labour markets, both of which were assumed to be sensitive to the usual market forces of supply and demand. In his new work Hansen virtually throws in his hand when it comes to analysing the labour market. He is content to let *money* wages be determined how they will, and devotes his energies to examining the various countermeasures that the government must be prepared to undertake in order to control the level of *real* wages. This might be thought to be a considerable advantage, but the results are in fact disappointing. The Government is set the very real task of keeping real wages at a certain level, while at the same time maintaining full employment and a stable general price level of consumers' goods (including indirect taxes). But this formidable assignment is achieved quite simply, within Hansen's model, by appropriate variations in direct tax rates; indeed, a plan is proposed whereby the Government " declares " what the appropriate level of money wages is, and then backs this up by further " declaring " that if the trade unions try to set money wages at any other level it will bring the mighty fiscal machine to bear in such a way that the outcome in terms of real wages will be worse than if the Government's advice had been heeded.

This example illustrates both the strength and weakness of this work. A relatively simple theoretical model is constructed, lucidly and painstakingly, within which the goals of full employment and a stable value of money are given explicit meaning. Some elements in the model, the " permissible and controllable parameters " (those variables that the government is both willing and able to use for the given policy ends, which in this case are the direct and indirect tax/subsidy rates, official purchases and the rate of interest) are used as the means by which the other variables attain the desired values when the model is subjected to a series of " shocks," such as changes in defence expenditure, productivity or money wages. The analysis is fairly exhaustive in this respect, and there is a wholeness of conception and a singleness of purpose that makes it something of a work of art.

In so far as the model is relevant to the current scene, useful results are obtained, and not the least of these are to be found in the sections devoted to some ruthless debunking of many popular fallacies about the economic significance of " under- " and " over-balanced " budgets. But like all simple logical structures that are used to analyse complex and pervasive economic processes, its immediate relevance is limited to those very few points where it touches reality directly. Elsewhere, considerable sophistication is required in interpreting the results, since the basic model is a short-term, comparative-static one, operating under conditions of perfect competition, perfect knowledge and foresight, and within specific structural assumptions. (The effects of introducing dynamic considerations and uncertainty are outlined briefly, it is true, but they are not really integrated with the general analysis.) This book will be valuable, indeed stimulating, to those

versed and interested in economic model building, but by the uninitiated or unsympathetic it will probably be considered just another theorists' toy—but it is more dangerous than most theorists' toys, because it often seems to be talking about the world around us.

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Making Money on the Stock Exchange. A beginner's guide to investment policy. By C. GIFFORD and J. A. STEVENS. (London: Macgibbon and Kee, 1955. Pp. 255. 15*s*.)

This beginner's guide to investment policy is primarily intended for readers with something to invest, but my own interest in the book has been largely academic. However, even from this restricted point of view I found it unusually stimulating. For here we have an honest and lucid (if elementary) account of how the investment game is played by a skilled player, and one, moreover, with a highly sophisticated understanding both of the limitations of human judgments about the future and of how to make the best use of inadequate and frequently unreliable evidence. That much of the relevant evidence is in a general sense economic serves to whet still further the interest of an economist-reader.

The general topics dealt with in the book are the *modus operandi* of the stock exchange, the analysis of company accounts, the interpretation of economic evidence and the formulation of an investment policy. In addition, there are chapters on three special topics: mining companies, investment trusts and foreign investments.

My only adverse comments amount to three trifles and one more serious criticism. The *first* trifle is that insurance companies are incorrectly described as liable to income tax at the standard rate (p. 40). The *second* is that the way to " avoid uncertainty " is not necessarily to hold shorter-dated stock (p. 41), for this achieves greater certainty of money-capital only by sacrificing certainty of money-income, so that choice between short- and long-term stock ought, strictly speaking, to be said to depend on which kind of uncertainty the investor finds less objectionable. The *third* is that I do not agree that " the shares of local [overseas] companies quoted in the local [soft] currency on local Stock Exchanges . . . must always be worth less to the [U.K.] investor . . . than to the local investor, who has no transfer problem " (p. 205). This conclusion might be falsified if, for example, there was a very poor local supply of investible funds.

My more serious criticism concerns the amount of extra depreciation (in excess of that shown in the published accounts) a prudent investor should deduct from a company's profits at times of rising prices. The authors reasonably argue that if the fixed assets, valued in the balance sheet at historical cost, would be twice as valuable if valued at replacement cost, then the published provision for depreciation should be doubled. It is, however, further argued (p. 118) that if prices have risen in the current year, say by 5%, yet another addition to depreciation is required. " This is needed

because the 5 per cent rise in prices has made the accumulated depreciation already provided, which was previously adequate, inadequate." Such a conclusion would surely follow only if the accumulated depreciation provision was held as money (or in promises of money), a practice which need not be followed and usually is not followed, and certainly had not been followed by one of the two companies mentioned as examples.

BRIAN TEW

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Économie et Espace. Essai d'intégration du facteur spatial dans l'analyse économique. By C. PONSARD. (Paris: Sedes, 1955. Pp. 467.)

Two books in this series produced under the auspices of the *École Pratique des Hautes Études* attempt to enlarge the scope and horizon of economic analysis. An earlier volume by Raymond Barre, *La période dans l'analyse économique*, dealt with the integration of time concepts into economic analysis, and thus with the evolution of economic dynamics, whilst this book investigates the integration of spatial concepts and the resulting formulation of "dimensional economics." Since a considerable amount of work has already been done in this field, the author presents primarily an excellent "intellectual balance sheet" (p. v) of the current position in spatial economic thinking. In view of the very rapid recent advances in spatial economics, the publication of this balance sheet, written by an outsider not attached to any of the existing schools, is very timely.

The discussion proceeds in a framework which conceives spatial relations as akin to a magnetic field. The poles in this field are economic decision making individuals or institutions which act on either micro- or macro-economic levels. Each pole has a supporting space as well as an economic horizon, and its universe is also attached to the totality of spaces by means of external economies. Within this framework the author's analysis proceeds at various levels of activities—for example at the level of competing firms or at the level of interstate relations—in order to discover the various sets of spatial relations. The procedure results in a relatively concise discussion of spatial theories and their integration with aspatial theories that have been evolved at similar levels of analysis. The framework is also useful in the systematic consideration of differences between homogeneous and heterogeneous spaces and in the resulting evaluation of macro-economic regions. The author regards heterogeneity in space as a function of the multiplicity of the activity of poles which is made variable by the introduction of concepts from economic dynamics. However, the question of the number of poles is not investigated, and thus this inquiry does not reach any satisfactory results and, in particular, prevents a transition from the spatial concepts of the economists to those of the geographers. In this respect the advance from von Thuenen's concepts of a uniform space, which has generally dominated spatial analysis, is still very limited. Altogether, Ponsard's framework appears to be primarily a pedagogical device—necessary due to

the confusing views of spatial economists—which does not lead to any significant advances in spatial thinking.

The author discusses in great detail the outstanding contributions of Lösch. He realises that Lösch's macro-economic investigations, despite his basically liberal outlook, supplied in fact a scientific substratum of theory for the German *Lebensraum* myth by providing " at least analytical elements . . . for its internal logic " (p. 224). Alfred Weber's work, which has been depreciated in many recent studies, is acclaimed for its historically early introduction of the concept of spatial equilibrium (p. 130). Of special interest today is the discussion of the little-known work of Miksch on the evolution of spatial economic structure under the impact of economic development (pp. 150 ff.).

In the concluding chapter Ponsard admits that spatial economic theory is, despite its long history, still in the early stages of its evolution. For this reason the status of the author's " dimensional economics " cannot yet be compared to the status of " economic dynamics," although both sets of theories present only different points of view from which to investigate the body of economics. Ponsard is now writing a history of spatial economic theory which together with the present volume should contribute further to the advance of this so far sadly neglected aspect of economics.

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The Poverty of Philosophy. By KARL MARX. (Moscow: Foreign Languages Publishing House (London: Lawrence & Wishart), 1956. Pp. 256. 3*s.*)

To a modern reader the *Philosophy of Poverty* is a dead horse, and Marx belabouring Proudhon is of highly specialised interest. The entertainment value, also, is not great. There is no wit in the *Poverty of Philosophy* apart from its title; Proudhon's ideas were confused enough to begin with, and Marx's presentation of them makes them totally unseizable, so that there is little sport to be got out of following the argument. All the same, for anyone interested in " What Marx Really Meant " some passages in this book are very valuable. In some ways they bear the same relation to *Capital* that Marshall's *Pure Theory* does to his *Principles*. Ideas that are clear in the early and short version were later elaborated into obscurity.

Here we can see that Marx's theory of relative prices is quite straightforward. Market values fluctuate around normal values under the influence of supply and demand for particular commodities (p. 39). Normal value of a commodity depends upon the minimum labour time required to produce it, that is, upon cost of production by the most efficient method known at any moment (p. 73). (Engels points out in the preface to the 1884 edition how this has to be modified to allow for different ratios of capital to

labour in different lines of production, p. 13.) The point of the Labour Theory of Value does not lie in the analysis of relative prices, still less in the doctrine that labour has a right to the whole produce. The point is that labour itself is paid for at its value, that is, that the normal level of wages is equal to the value of " the objects indispensable to the constant maintenance of labour, that is, to keep the worker alive and in a condition to propagate his race. The natural price of labour is no other than the wage minimum." It is clearly stated that, while wages may for a time depart from value, the value of labour is not influenced by the wages actually received (p. 56 note).

Another point of some interest in the light of latter-day controversy is that Marx specifically repudiates the idea that money prices are determined by the labour cost of gold. " Gold and silver, as money, are of all commodities the only ones not determined by their cost of production " (p. 97). The quantity of money is determined by the needs of circulation. This leaves the question of the money price level quite open, for Marx will have none of the idea that money-wage rates govern prices. Proudhon asserts, " It is impossible, I declare, for strikes followed by an increase in wages not to culminate in a *general rise in prices* " (p. 188). (This view leads him to be hostile to trade unions.) Marx replies, " If the price of everything doubles at the same time as wages, there is no change in price, the only change is in terms " (p. 188). This seems to concede the point, for a change in terms is exactly what is normally meant by the change in nominal values when the purchasing power of money alters. But in the next sentence Marx asserts that a rise in money wages raises real wages and lowers profits while leaving prices unchanged. This can be of no benefit to the workers, for the employers counter by introducing labour-saving machinery, create unemployment and bring wages back to the value of labour—that is to subsistence level.

Here is the essence of the whole argument. Marx contends that the workers cannot do themselves any good within the existing system, whether by strikes or by some fancy device such as substituting labour tokens for money. He is in favour of trade unions not because they can better the position of the workers immediately but because they goad the capitalists into increasing productivity and meanwhile prepare the workers to organise themselves for the revolution which will come when capitalism has ripened to the bursting point. In 1847 he expected this moment soon to come, for he speaks of " the conflict between the productive forces already acquired by men and their social relations, which no longer correspond to these productive forces " (p. 214). This conviction is itself an important part of the history of the intervening century.

The translation is the same as that used in the edition of 1935, with some notes and appendices added. The book is excellently produced, and very cheap by the standard to which we are sadly accustomed.

JOAN ROBINSON

Cambridge.

Towards the Rescue of Sterling. By R. G. HAWTREY. (London: Longmans, 1954. Pp. 159. 12*s.* 6*d.*)

"WHAT is likely to be an urgent problem in the near future is the immediate need for a fiscal policy and a credit policy which will put an end to excess spending, and to the inflation and adverse balance of payments which it causes" (p. 144). Whatever may be thought of his methods of diagnosis and specific prescriptions, Professor Hawtrey, writing towards the end of 1953, has proved a better prognosticator than have many other practitioners equipped with newer-fashioned techniques and favoured with a longer case-history of the patient, and much in this book is still directly relevant to the current situation.

The purpose of the book, as the quotation implies, was both to give warning of impending trouble and to prescribe remedial action. But somehow the execution falls short of the intention: the writing lacks the sense of urgency essential to good pamphleteering, and the prescriptions lack incisiveness and coherence. Partly this is because Professor Hawtrey's general position has been defined in previous works, and is largely left implicit here, partly it is a consequence of his habit of writing in the form of disconnected notes on the various phases of a topic. Nevertheless, as one would expect of him, he offers the reader original insights and angles of approach, and presents him with challenging questions.

The book falls into two sections: the first three chapters survey the three post-war crises, the last three discuss the contemporary situation and the remedies for it. The major theme is that the dual problems of inflation and balance-of-payments difficulties are the consequence of excess spending, in turn made possible by the redundant money created by war finance. This theme is given an individual twist by the proposition that excess spending initially impinges on stocks, and that stocks are replenished through an adverse trade balance, and also by the author's concentration on unfilled orders and delivery delays rather than prices as the main variable by which inflation influences the balance of payments. The solution, which hinges on the author's well-known views as to the central place of stock-holding in the determination of economic activity, is to ensure that government expenditure is adequately covered by taxation and borrowing from current saving, and to tighten credit so as to reduce excess spending, immediately by cutting stock accumulation and in the longer run by reducing the money stock.

This solution is open to the familiar Keynesian objections to its emphasis on stocks rather than fixed capital investment as the prime source of instability—the latter rather than the former surely explains the most recent crisis—and on the quantity of money rather than the level of interest rates as the governor of spending. On its own grounds, it is open to other objections which the author himself recognises but does not adequately discuss, notably the small proportion of stocks which is financed on credit (p. 91), and the difficulty of controlling bank advances when they form an abnormally small proportion of bank assets and the authorities are inhibited from raising

interest rates by a large floating debt. Nor is it clear how tight credit is to be reconciled with the author's view (p. 138) that industry must not be starved of the capital resources required for technical progress.

The minor, but more intriguing, theme of the book is that the 1949 devaluation was a stupid blunder, which imposed a drastic undervaluation of the pound in relation to the dollar from which the pound has not yet escaped, and which is now (p. 127) the main cause of overemployment and excess demand. The fact of undervaluation is established by the debatable procedure of comparing the movements of British and American wages since before the war. It has persisted, Professor Hawtrey argues, because on the one hand demand for exports has been choked off by the lengthening of order books, thus keeping the price of exports too low (and, though Professor Hawtrey does not develop this implication, the volume of exports too large), and on the other hand, membership in the International Monetary Fund ties the pound to a dollar standard, and American wages have been rising roughly as rapidly as British. To cure the undervaluation, Professor Hawtrey recommends appreciation rather than an increase in money wages, the appreciation to be introduced after a reduction in excess demand has improved the balance of payments; but he is rather imprecise about the desirable extent of appreciation, suggesting at one point (p. 116) that the dollar proceeds of exports should be maximised, at another (p. 132) that the rate should be set free to conform with a policy aimed at maintenance of a constant basic wage level.

This and other ambiguities and inconsistencies make the book difficult and frustrating to read: it has to be mined rather than mastered, and the seams often give out before yielding a profit. But it does undoubtedly have the suggestive value of an independent approach to the problem of sterling, which attempts to view it from a broader angle than that of the immediate state of the international reserves.

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The Theory of Customs Unions. By J. E. MEADE. (Amsterdam: North Holland Publishing Company, 1955. Pp. 121. 15*s.*)

THIS work embodies the De Vries Lectures delivered by Professor Meade at Rotterdam in April 1955. It is " a critical examination, not so much of customs unions themselves, but rather of the tools of economic analysis which have been used in the past in order to pass judgment upon customs unions " (p. 13).

Professor Meade excludes from his purview the initial difficulties in forming a customs union and the loss due to the displacement of productive resources from their pre-existing employment. His approach to his subject is on the lines of classical free-trade theory. Wherever there is a gap between the marginal cost of a product and its marginal utility, whether caused by

a tax, a subsidy or a monopoly profit, welfare can be increased by diminishing the gap.

Where a customs union removes the duty on a product which is supplied by one of the participating countries to another, and is not imported by the latter from elsewhere, there is an obvious gain (p. 32). The gain is not only from production at lower cost (setting free productive resources for other uses) but also from the consumer's surplus in respect of any increased consumption (p. 49). But if there is what Professor Viner calls " trade diversion " (p. 31), that is to say, a displacement of imports from a third country, which are produced at lower cost but are subject to duty, there is a loss to set against the gain. Moreover, additional exports from one participating country to another may be in part supplied by a diminution of the exports of the former to a third country where they are subject to duty. A diminution of dutiable imports into the third country " will represent a loss of economic welfare," because the high price is associated with high marginal utility to the consumer (p. 69).

In Chapter V (pp. 67–82) Professor Meade follows out some of the more remote repercussions on production and consumption, especially in relation to complementary and substitutable products. For this purpose he assumes not an entire customs union, but a small reduction in the duty on a single commodity, as on the importation of beer from Belgium into Holland, the duty on beer from other countries remaining unchanged (p. 63). To assess the effect on economic welfare, " one must trace out the repercussions of this change upon all the quantities of all products traded internationally, and one must then weight each change in the volume of a product traded by the difference between its price in the country of export and its price in the country of import " (p. 83).

His analysis does not seem to require the limitation to a " small " reduction of duty which he assumes. The limitation seems to be dictated by the mathematical formula in an Appendix (pp. 120–1). The application of the calculus requires the very artificial assumption of *continuous* variations of price and of utility. It is only in virtue of that assumption that utility can be supposed to tend to a true maximum, but for Professor Meade's purposes it is not necessary also to assume that the change of duty is small.

His whole analysis is subject to certain narrowing postulates. Within each trading country there are initially to be no divergence between marginal costs and values and no external economies or diseconomies of production (p. 57). Costs also are to be subject to decreasing returns (p. 54). The effect of introducing increasing returns is briefly dealt with (pp. 93–4). But for practical purposes Professor Viner's implicit assumption of constant returns (pp. 44 and 53) is usually more appropriate to a manufacturing industry than either increasing or decreasing returns.

Professor Meade fully recognises that the validity of his conclusions is limited by his assumptions, and even within this limitation " it is impossible to pass judgment upon customs unions in general. They may or may not

be instruments for leading to a more economic use of resources. It all depends upon the particular circumstances of the case" (p. 107).

Nevertheless, the absence of any clear-cut general conclusion does not detract from the value of his very acute analysis. It supplies a method of approach to one important aspect of the practical problem of a customs union, and will help the projectors to find their way through the labyrinth of repercussions with which the problem is beset.

RALPH HAWTREY

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Income and Wealth, Series V. Edited by SIMON KUZNETS for the International Association for Research in Income and Wealth. (Cambridge: Bowes and Bowes, 1955. Pp. xiv + 242. 42*s.*)

Now that the problem of economic growth has become a major preoccupation of theorists and policy makers, the need for empirical evidence on past experience is widely felt. The quantitative evidence is surprisingly scanty. In 1950, however, Professor Simon Kuznets, under the joint auspices of the International Association for Research in Income and Wealth and the U.S. Social Science Research Council, initiated a programme of research designed to fill the gap on an international scale. This volume, which contains papers arising out of the Castelgandolfo (1953) Conference of the International Association, is a result.

It is the second in the Association's series of conference volumes to be devoted to the topic of economic growth. The first, *Income and Wealth, Series II*, dealt with the case of the United States. The present book examines long-term estimates of national income and expenditure and of related or component aggregates for six countries—France (1780–1950), Germany (1860–1950), Denmark (1870–1952), Hungary (1900–49), Japan (1875–1942) and the United Kingdom (1870–1952). We have here, therefore, a variety of case histories covering periods ranging from fifty to one hundred and fifty years, and dealing with countries at widely different stages of development. The United Kingdom, for example, was an industrial economy at the beginning of the period under review: Hungary was still in the early stages of industrialisation at the end of it.

The papers vary in length, quality and character. There are full annual series for the main national-income aggregates for the United Kingdom, Denmark and Hungary. Period averages and estimates for benchmark years are given for France, Germany and Japan. With the notable exception of Professor Perroux, whose lively essay on the economic growth of France is inspired by more than the mere statistics of the case, the authors have been regrettably restrained in their attempts at economic analysis. Possibly it is inevitable and proper that in the early stages of a path-breaking enterprise of this magnitude the individual investigators should be too preoccupied with the problems of their raw material to generalise more ambitiously than most of them have done so far. Possibly also the compilers

of the basic estimates are temperamentally disinclined to subject them to the stresses and strains of advanced economic analysis. The consequence is, however, that although the volume is important as a source book of statistical data on economic growth, it is disappointing in its contribution to theory.

The task of new estimation and revision of estimates in this field is a continuing process and the work has been brought to different stages for each of the countries considered here. The paper by Bjerke on Denmark is a summary of preliminary estimates prepared in the Danish Statistical Department and in that sense is an interim report on work still in progress. Yamada's paper on Japan is a critique of recent estimates which underlines the need for a drastic re-consideration of the basic data for this country. The paper by Perroux knits together the implications of a series of quantitative studies recently carried out by research workers at the *Institut de Science Économique Appliquée*. Eckstein for Hungary and Jostock for Germany give for the first time the results of original and scholarly inquiries in this field for their countries. The paper by Jefferys and Walters on the United Kingdom is the product of a long and respectable tradition of national-income research.

The contribution for the United Kingdom is something of a milestone. The authors have built into their estimates of national income and expenditure the work of Bowley, Hobson, Clark, Prest, Chapman, Stone, Bellerby, Utting, Barna, Cairncross, Imlah, Phelps Brown, the Central Statistical Office and many other careful investigators in this field. They have constructed their own series for certain sections of national expenditure, and they have made their own adjustments for errors and omissions in some of the series they have taken over from other investigators. But the outstanding feature of their contribution is the fact that it constitutes a practical summary and a synthesis of past work in this field.

In effect this volume is likely to constitute a standard work of reference on its subject for some time, not only because it contains the results of a considerable effort in original statistical research, but also because it offers a critical review of past estimates for the countries it considers.

PHYLLIS DEANE

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The Growth of Physical Capital in Agriculture, 1870–1950. By A. S. TOSTLEBE. *Capital and Output Trends in Mining Industries, 1870–1948.* By I. BORENSTEIN. National Bureau of Economic Research, Studies in Capital Formation and Financing, Occasional Papers 44 and 45. (New York: National Bureau of Economic Research, 1954. Pp. 92 and 81. $1.00 and $1.25.)

THE two studies under review are part of the series relating to trends in capital formation and financing, and present results in advance of full publication. The inquiry as a whole is under the guidance of Professor Kuznets and is supported by the Life Insurance Association of America.

The practice of the National Bureau of releasing the results of its research fairly quickly in the form of occasional papers is to be commended. As usual with these papers, the presentation of the statistical material is excellent and the text concise and lucid. The findings are usefully summarised and interpreted, partly in Professor Kuznets' introductions, yet space is found for a description of statistical sources and techniques (including in the paper on agriculture an appendix on " Methods of Estimating the Number and Value of Chickens, by States, Census Years, 1870–1920 ").

Capital in these studies is understood in the financial rather than in the physical sense, and it includes land and reproducible fixed assets, as well as working capital. Although the basic concepts are not discussed at length, the aim appears to be to measure something corresponding to market values and then correct for price changes. Agricultural capital consists of land and farm buildings (including dwellings), machinery (including motor cars), livestock and growing crops; minor items of working capital are ignored. The data come from national agricultural censuses and similar statistics. In mining all working capital, including cash balances, is included, and the data are derived from company balance sheets. Assets owned rather than assets employed are included, and the relationship of the two may have changed over time (for example, the importance of leasehold mining rights has changed).

The first study brings together the essential and very interesting information relating to the long-term development of American agriculture in terms of man-power, capital and output. The discussion of the changing regional pattern is particularly interesting, but it is impossible to comment upon it here in detail.

The number employed in American agriculture reached its peak in 1910 (already in 1890 in the north-east, but only in 1930 in the western regions) and, as a result of the decline precipitated by full employment in the last fifteen years, less than 7 millions are now in agriculture. This number is the same as in 1870, but the proportion of the occupied population engaged in agriculture declined from 53 to 11% during the period. The acreage of farms and output, however, continued to grow almost uninterrupted. Capital, as defined here, grew in terms of 1910–14 prices from $20 billion in 1870 to $54 billion in 1950; excluding land, the growth is from $6 billion to $19 billion.

In spite of mechanisation, the great bulk of agricultural capital is still represented by land. Of the rest, machinery and livestock account for two-fifths each, and growing crops for one-fifth. In the course of time the share of machinery increased at the expense of the share of livestock, as, since 1910, horses and mules disappeared. The value of assets per farm was only one-third of the national average in some regions, but more than double the average in others in 1950.

The output of United States mines grew parallel with gross national product, that is, growth has been rapid except for the dip in the thirties. First precious metals, and later other metals and coal, reached a peak, but

the figures for the speedily expanding petroleum output increasingly dominate the total. Employment reached its peak in 1919, and has slowly declined since. The value of capital, excluding land, grew in 1929 prices from $0·1 billion in 1870 to $8·5 billion in 1929. The striking conclusion is then reached that there was a decline to $6·7 billion by 1940, and only a partial recovery to $7·7 billion by 1948. In particular, capital in petroleum and natural gas, which accounts for the bulk of the total, was the same in 1929 and 1948.

One of the main objects of the inquiry of which these papers form part is to throw light on capital–output ratios, and to make thereby possible the projection of future capital requirements. Underlying this object is the belief, evident in Professor Kuznets' recent writings, that long-term economic growth, as indicated by the usual social accounting measures, exhibits certain regularities and certain stable relationships between the different variables considered. Much of the discussion in the paper on mining is centred on the capital–output ratio, which between 1870 and 1919 rose from 0·7 to 2·3, and fell since to 1·3 in 1948. This main conclusion remains intact, even if each branch of mining is taken separately; the dominant petroleum ratio rose from 1·8 to 5·9 and fell back to 1·8. The author examines the qualifications, but remains convinced that the conclusion is correct. (It should be noted that capital per worker continued to increase.)

In the paper on agriculture the subject of capital–product ratios is only brought up in Professor Kuznets' introduction. He estimates that, on a crude basis, the ratio fell 18% between 1880 and 1910 and 33% between 1910 and 1950.

Do these findings indicate long-term trends in capital, or are they dependent on the concepts chosen, the statistical data available and the period considered? A reading of the carefully worded qualifications certainly makes it evident that generalisations, such as those contained in Mr. Colin Clark's broadcast early in 1955, are meaningless without an adequate definition of the concepts.

It is relatively easy to establish conclusions for agriculture which are different from the above. If product is measured as net output instead of gross output, the ratio (as Professor Kuznets suggests) would have declined by 10% only during each of two periods mentioned above. The decline would be smaller if capital were measured in 1950 prices, and can probably be accounted for by imperfections in the data. For instance, the farmer's dwelling is included, and the number of farms has risen less than other capital and then declined. Nor do the estimates allow for any improvement per unit of livestock. All in all, one might say that capital grew about proportionately to output, but it is not possible to be more exact.

The findings on mining are heavily dependent on the concept of capital chosen—depreciated book values deflated by the use of cost index-numbers. Apart from the well-known imperfections of these index numbers, it is with a certain scepticism that one looks on trends in real economic variables derived from company accounts. If we assume that accounting is generally con-

servative, and that there is a tendency in accounts to follow cyclical and other fluctuations (through revaluations and premature writing off), the validity of this approach may appear doubtful. It is significant that the author finds a connection between rates of growth of output and the capital–output ratio. Fluctuations in new investment, together with imperfections in book-keeping, are sufficient to cause a certain degree of fluctuation in the capital–output ratio. In particular, investment after 1929 has been exceptionally low. That, however, does not imply that capital—in some significant economic sense—has been "eroded" in the way book-values have diminished. Suspicions increase by a comparison of Dr. Borenstein's figures for plant in mining with the estimates, based on the perpetual inventory method, of Dr. Goldsmith. The latter only covers part of plant in mining, apparently two-thirds in 1929; but for 1940 and 1948 Dr. Goldsmith's figures are nevertheless higher than Dr. Borenstein's. Moreover, 1948 is the last year for which estimates are made here, and the post-war investment boom had as yet little effect on the figures. Currently expenditure on plant and equipment alone is running at an annual rate of nearly $1 billion, which indicates additions at a fast rate to the stock of capital.

It is to be hoped that when the full findings of this inquiry are considered, the authors will check the consistency of their estimates with other indicators of capital, and examine in particular the suitability of the concepts used for the main objects in hand. For the time being, the capital–output ratio ought not to be used without a precise understanding of the way in which the estimates were made.

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The Economic Development of Malaya. Report of a mission organised by the International Bank for Reconstruction and Development. (Baltimore, Maryland: The Johns Hopkins Press (London: Geoffrey Cumberlege), 1956. Pp. 707. 60*s*.)

This report of the International Bank's mission to Malaya is, like that of other similar missions, a general study of the country's economy, but this mission's overriding objective was the production of a realistic programme for the quinquennium 1955–59. The general report occupies 234 pages, or roughly one-third of the volume, and is a summary in four parts of Part V, which occupies the other two-thirds, and consists of twelve Technical Reports, the principal topics being agriculture, mining, power, transport and communications, industrial development, education and social services, currency and banking. Part I gives a very short general background survey, which high-lights the essential characteristics of the Malayan economy to-day and is adequate for the mission's short-period objective, though hardly perhaps for longer-period considerations: and it ends with a summary of the mission's programme of public investment. Part II deals with the Productive Factors. Part III covers the Social Services, and Part IV, entitled

Financing and Organisation of Development, considers the financial resources which can be made available, and proposes certain changes of governmental organisation for planning, and the institution of a central bank. Part V, as already stated, contains the technical reports on which the previous parts are based.

In general, the report is unexciting, and probably all the sounder for that. The mission has not discovered any key to a golden future for Malaya which has been missed by the Malayan governments or by private entrepreneurs. " The public investment programs which we recommend for the Federation and Singapore do not represent significant departures from the recent patterns of public investment in both territories, either in amount or character." Thus the governments have got the confirmation of outside experts that they are on the right lines, rather than any bright new ideas. At the same time the mission has not been afraid to criticise, or to suggest modifications of present policies and projects: some examples are the discussion and conclusions concerning the rubber replanting problem and its financing, concerning the minimum price policy for padi and the mission's proposal for an import duty on rice combined with subsidies to domestic padi producers, and concerning the issue of protective measures for industry in the Federation, as well as critical comments on particular projects, and the proposals for a central bank and some form of credit institution. The report is often notably cautious, and its general tone is realistic, and the mission would seem to have done its job in a way which should be really helpful. This is perhaps particularly true of Part III, The Social Services, and of the very thorough technical report on Education (a preliminary draft of that part of this report concerned with the Federation was made available to the Federation Government in mid-1954, and the conclusions in the Federation White Paper on Education October 1954 are substantially the same). So far as a layman can judge, the same applies to the report on Public Health and Medical Care. These two technical reports occupy nearly 200 pages out of the 400 pages of Part V, but they should not overshadow some of the others: Technical Report No. 8 on Industrial Development is an admirable economic essay in twenty-two pages, and No. 12 on Currency and Banking in fourteen pages not only gives a clear account of the working of the present system, but sets out a succinct case for a central bank.

For the Federation the mission recommends a public investment programme for the quinquennium 1955–59 totalling Malay $775 million, of which 25% is allotted to agriculture, 20% to transport and communications, and 11% to power, and most of the remaining half to social services. For Singapore the programme amounts to $610 million, over half to be spent on essential city services of all kinds, and the rest on social services, especially housing and education. To finance the Federation programme, income tax is to be stiffened, State and local revenues increased, and internal borrowing expanded to the feasible limit, and this should result in an overall deficit by 1959 of about the $220 million available government balances at the end of 1954. The Singapore programme is to be financed by stiffened income tax,

increasing the education and other rates and by domestic borrowing and use of reserves, leaving an uncovered deficit of $74 million to be adjusted in the light of developments.

To whet the appetite of potential readers, here are two of the many topics of interest in this large volume. The education programme is almost staggering. In Singapore in 1947 gross public expenditure on education was $4 million, in 1954 over $30 million, and the mission suggests that it may well be more than double that in 1959, because, to quote one factor, the primary school-age population may by then have increased by 50%. The problem in the Federation is even more serious: about 50% of the primary school-age population now attends school, and merely to maintain this proportion will mean an increase in costs from $102 million in 1954 to $145 million in 1959, that being reckoned the limit of available resources.

Secondly, there is the proposal for a central bank, which is probably all the more topical now that Malaya's political independence is definitely scheduled, for as the mission says, " A central bank has become the symbol of monetary independence without which political independence is thought to be incomplete." The mission's case, however, rests on economic arguments: that while Malaya's economy has in the past gained great advantages from the exchange stability and security of the currency board system, the economy to-day is very different—a national economy with its own settled labour force, local capital and enterprise and an indigenous banking system at least as important as the facilities provided by overseas banks, while both the need and the opportunity for local monetary management are much greater, more especially as Malaya must now think of its future development in terms of domestic savings rather than of foreign capital. But of course in the foreground is the objective of smoothing-out economic fluctuations, and here the mission thinks that something may be achieved despite a carefully worded estimate of the limited scope for typical central bank action in Malaya's circumstances, and of the requisite safeguards against abuse. " There are no ' tricks ' by which a country can maintain a scale of private and public investment in excess of the flow of capital from domestic saving and from abroad " is a dictum which might well be inscribed over the new bank's doors, and on the desks of the new finance ministers.

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The Great Experiment. By F. Thistlethwaite. (London: Cambridge University Press, 1955. Pp. ix + 335. 25*s.*)

Despite the efforts of a handful of stalwart enthusiasts, the teacher whose task it is to introduce the British student to American history still has to rely almost entirely on the writings of Americans themselves. He is acutely aware of the inappropriateness for that purpose of American history books, written as they are for American readers and based on assumptions which,

in Mr. Thistlethwaite's words, " are not those which an Englishman instinctively understands." *The Great Experiment* is an apt title for a book which attempts to remedy this situation by presenting some two hundred years of American history, in a form designed for the British student, within the span of just over 300 pages of text.

The only reasonable way to appraise a book of this nature is not to discuss whether one agrees with this or that interpretation, whether one approves the degree of emphasis placed here or there, but to ask whether the book appears likely to succeed in its prime purpose, of " explaining " American history to the British student. From this point of view the book is admirably, even triumphantly, successful. The author combines a knowledge derived from experience of the difficulties of the British student with a detailed familiarity with the American scene and with all aspects of American history. The book does not fit easily into any one of the usual categories into which history is divided, diplomatic, political, economic, social, cultural. It contains something of all these diverse elements; how else, indeed, can American history be satisfactorily written? If the author has a single theme, this is to answer Carleton H. J. Hayes' question, " the American frontier—frontier of what? " Hence the two factors which make American history so unlike European history—immigration and the settlement of a continent—are rightly given a predominating role in the story which is told.

Although intended as an introductory text, it is not a book for the lazy. As well as instructing, it stimulates to further research. The author has concentrated on interpreting rather than merely reciting his material, assuming that many facts, if not already known, are easily obtainable by the reader with an atlas and an encyclopædia at his side. Footnotes are used sparingly, with the primary purpose of introducing the student to further reading. The choice of references has been made judiciously; the works cited open up interesting vistas of reading not only to the beginner but also, this reviewer freely confesses, to those who already know a little about the subject. The bibliography of American history is so frighteningly large that readers will, no doubt, have their own suggestions to add to the references: given the main argument of the book, however, it is surprising to find no mention of R. T. Berthoff's *British Immigrants in Industrial America* (Harvard, 1953), the only satisfactory work on that subject; similarly, V. L. Parrington is mentioned but not J. Dorfman, M. L. Hansen but not J. B. Brebner.

In a work which is so comprehensive in scope, ranging from Willa Catha and Hamlin Garland to the Marx Brothers, from Henry George and Thorstein Veblen to Jenny Jerome, from railroads and monopolies to architecture and education, omissions and minor inaccuracies are excusable. The role of West Point and the scientific schools of Rensselaer, Harvard and Yale in developing American engineering techniques is neglected. The evolution of banking and financial institutions and the significance of currency problems are treated all too sketchily. It was the grandson, not the son (p. 222), of Junius Morgan who underwrote American war loans in 1915, J. P. Morgan senior having died in 1913; the initials I.W.W. stand for Industrial,

not International (p. 241), Workers of the World; the Hawley-Smoot Tariff was introduced in 1930, not 1920 (p. 280). Since the book will very obviously be used for reference purposes, the index is most inadequate: its omissions are countless and inconsistent.

Those who believe that a scientific approach to history is not incompatible with the production of a work of literary merit will have their faith greatly strengthened by Mr. Thistlethwaite's book. The greatest of its many virtues is that it is beautifully written. It is worthy to reach a very much wider public than that, the history undergraduate, to whom it is immediately addressed.

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Essays in Economic History. Edited by E. M. CARUS-WILSON for the Economic History Society. (London: Edward Arnold, 1954. Pp. viii + 438. 45*s*.)

THE university teacher of economic history in England has for a great many years now been in a difficult position with regard to recommended reading. Articles and monographs have run well ahead of general works, so that even a fairly minimal minded student must have some recourse to the journals. But the mechanics of access are notoriously difficult, and zeal can expire if the needed volumes have been thumbed and annotated by margin-bugs, are out or, even worse, missing. Miss Carus-Wilson and her committee have sought to remedy this situation; they have brought together in a single volume those articles in the *Economic History Review* and *Economic History* published between 1926 and 1948 which have been most in demand from the teaching point of view. The result is a book which all who are really interested (and those with an eye to examinations) should possess. Here the undergraduate may study both the method of contemporary scholars and how things stand at the frontier of discussion.

In some ways it is an austere volume. It deals with economic rather than social history. Miss Levett once described the latter as " that kind of history which Dr. Coulton writes ": vividly conceived, dangerously fired by imagination, full of the loving observation of the artist. This finds little place. There is no dallying to watch the woollens and silks worn, the houses lived in, the spices consumed; in fact, each essay is going somewhere—economic historians as here represented pass by " the inwardness of daily life," in favour of Alfred Marshall's view that it is change over time which is the essence of economic problems. Nor is there much of the kind of history to which Sir John Clapham aspired in his major work, presenting events as " a continuous stream of facts." Nor does economic history as the adjunct and foil to a political theme figure here.

But, it should be noted, these kinds of economic history found little place in the *Review* itself in these years. Some might feel that this meant that it

was impossible for economic historians to meet the requirements of the " history as literature " school, as represented by the recent volume of essays in honour of Professor G. M. Trevelyan. Yet, most of these articles have their own kind of felicity in the development of a thesis, and most lead quickly to important general issues. The characteristic approach in the *Review*, from which most of these contributions come, was the selection of a problem arising from economic data as such: economic historians, as reflected here, seem to have had a strong sense of their own identity and function. There are clear signs of an apparatus of theory behind most articles. But it remains in the background: these are not mere attempts to clothe other people's models with facts.

This, of course, may simply mean that social and politico-economic history require more space than a review can offer, putting a premium upon more structured articles. Whatever the factors at work, they have operated to the advantage of the hard-pressed economist who wishes to keep contact with the historian. Some of the articles are pioneering and painstaking investigations of blind spots designated as important by some general frame of reference: Beveridge on corn yields in the Middle Ages, Bishop on open fields, Fisher on the London food market 1540–1640, Davies on the small landowner, Shannon on limited liability. Some are " revisions "—Postan dispelling error about the money economy or credit in the Middle Ages, Carus-Wilson and Nef describing their respective anticipatory industrial revolutions and Dorothy Marshall on the old poor law. Some are more in the nature of general syntheses: Fisher and Nef on the sixteenth century, T. H. Marshall on population, Beales on the great depression, Pares on the empire. Then there is Professor Tawney's celebrated article on the gentry, around which so much controversy has centred.

Do these excerpts exhaust the *Economic History Review* in these years—have we here, like the trailer of a film, all the exciting bits? Certain articles are not reproduced: those incorporated in later published work have been omitted. The twenty-two articles that do appear probably represent some three-quarters of those coming within the committee's terms of reference, namely as having teaching value.

Was this a wise criterion for a volume of reprints? On balance, yes. Utility dictated it; in any case there is unlikely to be a yawning gap between what active teachers and their pupils find helpful and the growing points of the subject. The main criticism might take the form that such a principle tied selection to the teaching prospectuses of British universities, where these might be out of date or affected by peculiar circumstances. The degree to which teachers were concerned with historians or economists respectively might be relevant. Or the extent to which non-British economic history is taught might affect choice. The volume is strongly English: Nef discusses Spain and France, Hamilton writes of Spain, Barbour and Wilson treat the Netherlands, usually with an eye to England. But even this nexus is cut in the sixteenth or seventeenth centuries, confining treatment thereafter to England and the Empire. But all this, involving the omission of

the Americas, Asia and Africa, is a reflection of the contents of the *Review* itself, rather than of the choice of the selectors.

It is to be hoped that the publication of this volume of excerpts will not discourage altogether the use of the back numbers. There remain the painstaking and scholarly monographs which have been winnowed away, there are the reviews which often reach the heart of a matter more quickly than more extensive treatment, and there are the bibliographical articles, which remain of great value. Indeed the Economic History Society might consider the case for a bibliographical volume.

All in all, a job well worth doing, and well done.

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Britain Between the Wars, 1918–1940. By C. L. MOWAT. (London: Methuen, 1955. Pp. v + 694. 30*s*.)

THIS book is a considerable feat of historical craftsmanship. In some 660 pages Professor Mowat attempts a comprehensive account of British experience between the wars. His interest is chiefly in politics, but the economic sections are substantial and few if any aspects of life are quite neglected. Topics range all the way from women's fashions in the 1920s to Keynesian economics, the general strike, Munich and the Norwegian campaign. Not everyone is an admirer of " total history," and some may deplore Professor Mowat's extensive reliance on derivative as opposed to original sources of information. Of the personalities who cross the stage only Baldwin comes alive, and the flavour of the book is of something read about, dissected and studied, rather than relived and understood from within. Yet in the end the result is impressive. The accumulation of detail comes to produce the illusion, almost, of reality. Here is the chronicle of an era, a guidebook to an entire period.

The years from 1918 to 1940 constitute a historian's nightmare. If ever there was an age of transition, this was it. It was intensely self-conscious, and is therefore abundantly documented. Yet even to those who lived in it it was a mysterious universe, abounding in paradox, even in contradiction. Everywhere nationalism and isolationism were the background to the activities of the League of Nations, while disarmament conferences were the accompaniment of constant rearmament. In Britain, socialistic and egalitarian policies were pursued by conservative governments, while a rapid improvement in the standard of living of most British people was achieved along with persistent and heavy unemployment and mounting dissatisfaction with the standard of life of the poorest members of the community.

Professor Mowat's will to see the period steadily and see it whole is much to be admired. It is also, unhappily, almost unprecedented, and his achievement is therefore the more outstanding. It is, however, strictly limited in its nature by his eschewing almost all comment. The facts are

left to speak for themselves, or at least they appear to be. This is never a satisfactory procedure, and it is singularly ill-suited to a period as turbulent as this one. The reader in search of an explanation must work out for himself the guiding ideas and the long-range trend of dominating circumstances which chiefly determined the history of these two decades. But it would be worse than ungrateful to complain that Professor Mowat has not explained the period when he has performed the prodigy of reporting it.

The economic sections are less good than the political ones. Characteristically, the author is at ease when writing about the tactics of the general strike, which he does at length. But his explanation of recovery from depression after 1932—increased consumption—is unlikely to satisfy any economist; and one of the few omissions in the book, although a most important one, is any reference, save for a single line on p. 457, to new product or cost-reducing innovation.

In dealing with measures of economic policy Professor Mowat is inclined to allow his narrative to become coloured by the views of those authors whose books he uses. This leads, accidentally, to instructive results. Protection, for example, is presented in an unfavourable light, apparently because almost all economists who wrote about it in the 1930s wrote from the point of view of orthodox classical doctrine, and so condemned it. But was some measure of protection really so absurd in 1932? Similarly, it is easy to poke fun at the vacillation and feebleness of policy regarding the coal-mines or at the absurdities which resulted from the Agricultural Marketing Acts of 1931 and 1933. But what were the alternatives? The implication of writing as Professor Mowat does is that some form of the rejected policies of socialisation or nationalisation or a return to the nineteenth century was the answer. But what form? We cannot rest satisfied to-day with a view of the inter-war period based on opinions some of which might have been held by Professor Cole and some by Professor von Mises twenty years ago. We could not be satisfied, for that matter, with a view based on the opinions of either one of them. What do we really think now, in the light of later experience, of the policies pursued between the wars—and of those rejected? Present-day thought on economic policy is in many ways, perhaps in most ways, staggeringly different from that of two or three decades ago. But this only strengthens the case for a critical review of the makeshift policies of the inter-war years. Such a review would be most valuable. But to see the years themselves in perspective is the first task, and Professor Mowat's book is a welcome beginning.

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Merchant Shipping and the Demands of War. By C. B. A. BEHRENS. *Agriculture.* By K. A. H. MURRAY. History of the Second World War, United Kingdom Civil Series, edited by Sir Keith Hancock. (London: H.M. Stationery Office and Longmans, 1955 and 1956. Pp. xv + 494, and xii + 422. 35*s.* and 30*s.*)

THESE two volumes in the civil series of the history of the Second World War deal with what are in effect two facets of the same fundamental problem —that of maintaining supplies and moving troops with limited and depleted shipping resources. Miss Behrens' volume deals with the more central problems; Sir Keith Murray's with the remarkable contributions of British agriculture to the economising of imports.

Miss Behrens' book begins with the pre-war planning. Here, as throughout the book, she stresses the difficulties and uncertainties of the calculations. I wonder whether she has not absorbed a little too thoroughly the atmosphere of the war-time Ministry of Transport and does not exaggerate, both in this and other cases, the difficulties of marshalling the statistical evidence sufficiently accurately to establish the dangers and difficulties that were likely to arise beyond any real doubt. For if one re-reads the history and sees it developing through Miss Behrens' eyes, the thing which strikes one most forcibly is the muddle and mishandling of all the problems associated with importing-capacity—stock-building, economy of food and raw-materials, as well as use of shipping itself—through not only the post-Munich period of peace, but also the first nine months of war, and the failure to use that period to stock this country against the siege that was almost undoubtedly to come. It was not, of course, the sole responsibility of those concerned with shipping, but a vigorous and foreseeing government and civil service should surely have dealt more effectively and more promptly with those problems. Indeed, as emerges from Miss Behrens' narrative, it was not really until February 1940, when Sir Samuel Hoare (as he then was) was asked to review the shipping situation, that a serious attempt was made to see the whole range of relevant problems, and even thereafter neither those responsible for food nor for raw materials would seem effectively to have restricted consumption and to have accepted and operated import programmes within the limits that had been set for them. Over the next few years these initial failures could have lost us the war.

I cannot hope, in a short review, to follow Miss Behrens through all the events, all the crises and all the achievements of the following five years. She traces them first down to the fall of France, and through the period to Pearl Harbour, with the attempts and remarkable successes in persuading shipowners and ship-masters (and it was the latter who had in most cases to make the difficult decision) to bring their ships into British ports when their countries were forced to surrender to Germany. It was at this time that concentration on the West Coast ports was forced on us, with consequences which were difficult to predict, but ultimately proved to be less disastrous than had been feared. It was at this time also that the bombing of Liverpool and other West Coast ports caused such havoc that for a short period it

seemed that imports would be reduced far below the danger point. Miss Behrens attempts an estimate of the consequential loss of imports through delays in port, which she puts at no more than 12,000 tons on a total of just under 31 millions in 1941. But the total loss of potential imports over the next twelve months resulting from the sinking and damage of ships and the stocks that were destroyed in the eight nights of raids would seem to have been nearer to 300,000 tons.

The real crisis came in the next phase, with the intensification of the submarine war on the one hand and the increase of demands for shipping for military purposes—to the Middle East in particular—on the other. Down to 1942 the military requirements, broadly speaking, were accepted without criticism, but as shipping became scarcer and military needs mounted, the relative claims of minimum imports and of military needs came more clearly into conflict. And after Pearl Harbour the growing American requirements made the strain constantly greater rather than less, even though their vast expansion of shipbuilding began at a later stage first to balance the sinkings and ultimately to give a growing total of available shipping for the Allies as a whole.

Miss Behrens brings out with great clarity the difficulties that arose over the following years in working out between the Allies a system of effective combined control over the common pool of shipping, and in particular the difficulties of securing, at a time when we were constant claimants on American building, that the American Services should subordinate their claims to the needs of our civil import programmes, even when the President had, as it seemed to us, established the matter in principle.

But what seems to emerge from this book even more significantly is a paradox about the whole planning of the war. There were in effect two powerful limiting factors on all our activities: man-power and shipping. The problems of man-power were, in the United Kingdom, integrated into all our thinking about the formulation of war policy. They dictated the extent of the call-up each year; the scale of the munitions programmes; the whole deployment of the Forces. And through the Ministry of Labour, on the one hand, and the Cabinet Committee on man-power, on the other, this limitation was constantly watched, and serious and carefully thought-out policies were framed to make the utmost of this limiting resource; the results may not always have been perfect, but they were effective and all-pervasive. With shipping, it was almost the exact opposite. There was wide consciousness of it as a limiting factor, but it did not, despite the existence of a central organisation for the allocation of importing capacity, exercise a similar direct influence on the day-by-day planning. It is not easy in retrospect to explain why. Man-power and shipping were alike in transcending the boundaries of the purely civil world of war-time, and were alike in being common to both civil and military sectors. Yet we find, at one stage in Miss Behrens' book, Lord Leathers remonstrating to the Chiefs of Staff late in the War that military planning had rushed ahead without adequate consultation with the shipping authorities.

I believe the explanation is to be found in the maintenance throughout the war by the Ministry of Transport of a curious *mystique* with regard to all attempts by others outside the Ministry to share in serious statistical thinking about the problems, and in consequence a curious isolation from other Departments. Miss Behrens has herself somehow managed to assume this *mystique*: the experts within are not prepared to make an estimate; the amateurs outside are incompetent to do so. Occasionally the foolhardy statisticians on the Prime Minister's staff are prepared to stick out their necks, but no one else is ever so brave as to do so. I myself venture to doubt whether the *mystiques* of the Ministry of Transport were really more mystical or more incomprehensible to normal educated human minds than were the *mystiques* of the Ministry of Labour. Operating ships so as to minimise the tons-days of shipping per ton of imports or military cargo is an immensely complex task; but so is the operation of the call-up so as to enable an infinitely elaborate munitions programme to be manned up. The Ministry of Labour solved the problem of retaining and mastering its own *mystique* and at the same time guiding others in thinking in the broader and cruder terms in which the big decisions of deployment had to be made. I am not at all convinced that the Ministry of Transport could not have enabled others to share in its thinking in terms of the ton-days of shipping involved in all the various activities of 1944, and have helped others to steer planning into a framework in which shipping could be most effectively used.

Sir Keith Murray's book, by contrast, is much less in the midst of the hurly-burly. There is a much clearer feeling not only of pre-war thinking, but also of readiness and ability to carry thinking into effect when war came. The emphasis is in this volume inevitably on the carrying out of policies; the examination of war-time food policy is, of course, the responsibility of Mr. Hammond's two volumes in the same series. The result is a sense of order in contrast with the half-ordered chaos of shipping policy, and of quietly operating machinery putting into effect a very remarkable revolution in British agriculture. For if one measures the achievement in terms of output net of imports, this increased by 25% between 1936–39 and 1943–44; if one measures in terms of the output of agriculture itself, net only not of imports but also of industrial output, the increase was 15%.

But Sir Keith Murray does not rest content with this achievement. He finds in effect four main points for criticism. First, there was in the early years of the War a serious failure to maintain the output of milk, which was badly needed as an element in the war-time diet; this failure he attributes partly to weather but mainly to a failure to foresee the probable effects on milk yields of the drastic changes of feeding habits to which the dairy herds were subject through reduction of feeding-stuffs. One suspects that this in turn traces to the inadequate pre-war thinking about importing capacity to which I have referred above. Second, there was a failure to frame a price policy during the first two years of war which would give a clear indication of relative priorities and the right incentives to adjust to those priorities. Third, there was ineffective control over the output of agriculture once it was

produced, and in particular over the rate of marketing of livestock and the sale of cereals for off-farm consumption. Fourth, the machinery for the formulation of general agricultural policy was deficient, in Sir Keith Murray's view, in the first two years of the war largely as a consequence of divergent interests and lack of clear demarcation on broader policy between the Ministry of Food and the Ministry of Agriculture. After mid-1941, in his view, the machinery worked fairly smoothly.

By and large this is the story of a great achievement, but in the light of Miss Behrens' story one is tempted to ask whether agriculture really did or did not just all that was possible to economise shipping. Over the six years 1940 to 1945 imports of food and feeding-stuffs, apart from luxury foods, were about 43 million tons less than they would have been on a pre-war basis; calories per head per day were not greatly reduced—they averaged about 5·0% less. This was a great contribution to the shipping problem. But it is not easy in the light of the evidence that Sir Keith Murray provides to judge whether other alternative food and agricultural policies might have yielded greater savings of imports with an equal maintenance of diet, and a diet which would equally have maintained morale.

If one lesson seems to emerge from these two books, it is surely how very much more practicable it is to exercise effective and rational control in war-time in matters that concern only one's own nationals than in those which concern a whole group of allies. Have we not undeservedly acquired a reputation, which at least one other great nation is wresting from us, for a preference for muddling through.

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NOTES AND MEMORANDA

ECONOMIC GROWTH AND THE PRICE LEVEL FURTHER CONSIDERED

SURELY Messrs. Phelps Brown and Ozga in their article in this JOURNAL (March 1955) have overstated their case when they say " that monetary changes have done little to cause or control the movement of prices," particularly when the word " little " is, read in the context of the whole article, apparently an understatement meaning " no " or, perhaps, " almost no." The traditional explanation to which reference is made is that of Alfred Marshall from his paper " Remedies for Fluctuations of General Prices." It would be well, however, to go back to the explanation by Adam Smith in the Digression on Silver in Chapter XI of the *Wealth of Nations*. There Adam Smith applied to gold precisely the kind of analysis that Phelps Brown and Ozga apply to raw materials. Compare for instance:

> " If by general progress of improvement the demand of this market should increase, while the supply did not increase in the same proportion, the value of silver would gradually rise " (*Wealth of Nations*, Cannan edition, p. 176).
>
> " When industrial capacity tends to grow more quickly than the output of primary products, a shortage of these products is felt and their prices rise, in terms of money, and also relatively to the price of industrial effort " (Phelps Brown and Ozga).

Here we have the same analysis of relative rates of growth of supply and demand applied first to one " primary product," silver, and then to all such products except silver. Adam Smith and Phelps Brown and Ozga agree that the result will be an increase in " labour command "; but the modern authors are not quite convincing when they state that in the one case the result will be a rise in money prices of the various raw materials, and when they deny in the other case that there will be any change in the goods' price of the money metal.

Some revision of the " traditional " view was necessary. Some of the effect of the gold discoveries was the effect of the " investment " in exploration and development which led to the discovery, and to the investment in developing the discoveries. But if one is less ready to accept the change in the supply of the money metal as " initiating " price changes, one may continue to accept the importance of its supply in permitting or inhibiting certain movements. To suggest that the traditional view under-estimates the freedom of the money supply to adapt to monetary needs in spite of its metallic base is not to accept the view that such freedom was as complete through the nineteenth century as it has become by 1955.

I would like to comment on a number of the theoretical points raised in this article:

(1) The authors make a point of the fact that the monetary stock was only a part of the whole stock of gold. But Adam Smith discussed the growth in the demand for gold in its non-monetary use as well as in its monetary use. For instance: "A greater annual produce would require a greater quantity of coin to circulate it; and a greater number of rich people would require a greater quantity of plate and other ornaments of silver" (*Wealth of Nations*, p. 181; cf. *ibid.*, pp. 202–7). For the non-monetary part surely the authors' theory of relative supply holds. But is the monetary value entirely unrelated to the non-monetary value, and vice versa? Surely gold is homogeneous and must have one value in all uses.

(2) The authors tell us that "the connection between the monetary stock of gold and the quantity of means of exchange in actual use was both indirect and flexible: it was liable to change, and was in fact changed, at many points within the inverted pyramid of the banking system." Of course it was flexible; the question is how flexible. Of course there was change. But was it not change in the form of progressive economy in the use of the money metal? The rate of such change may well have been affected by the greater or less scarcity of the metal. But if this rate of change was not quite independent of the gold supply it was, surely, largely so.

(3) The authors further point to the amount of money held under the "precautionary" motive and therefore "available to reinforce the circulating balances." But increasing income and wealth involve an increase in the demand for "precautionary" balances; and these are not "available" unless some incentive is offered to their holders to part with them. Here indeed lies part of the explanation of the behaviour of Consols. (In part this behaviour may be explained by the change in the marginal efficiency of capital associated with the favourable expectations induced by gold discoveries.)

(4) The authors state that "a change in prices brought about from the side of money must be expected to raise most product and factor prices . . . but in fact the British terms of trade suggest strongly that the movements of wholesale prices were systematically connected with changes in the terms on which primary products were available to the industrial worker." Such changes in the terms of trade between raw-material producers and manufacturers can surely be explained equally well in terms of the greater degree of sensitiveness and flexibility in the prices of raw materials (perhaps related to the different degree of competition) when general monetary demand is rising or falling.

(5) The authors tell us that there is no evidence of the "tilting" of the trade cycle, "making the phases of monetary ease and expansion rather longer or further reaching when the price trend was rising." Yet one form of "tilt" is evident. Prices come out of each cycle lower than they went in on the secondary swing down, and higher than they went in on the secondary swing up.

(6) Finally, the adjustment of monetary habits and institutions to plenty or scarcity of gold had to be "international" in scope. In so far as the

world adjustment was inadequate, and the particular country (say England) was committed to the international standard, its freedom of adjustment was limited, or its problem of adjustment made more difficult.

There was a lot of muddy water in the bath. But have not Phelps Brown and Ozga thrown out a rather healthy baby with the bath water? Is not the real problem to examine the characteristics of the now cleansed baby?

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A NOTE ON INCOME DISTRIBUTION AND THE MEASUREMENT OF NATIONAL INCOME AT MARKET PRICES

In the course of his most interesting article in the Economic Journal for June 1955 Mr. J. L. Nicholson refers to the assumptions upon which valuation in market prices can be regarded as a significant method for measuring changes in the national income. In this matter he is a model of caution, stressing that " estimates of national expenditure at market prices " can be given no more than " limited meaning in terms of welfare." " Such an interpretation would, strictly speaking, apply only at the margin (*i.e.*, for comparisons of relatively small changes) "; and, even more important, it is only valid on the assumption of unchanged income distribution. (" A rather more serious limitation, not mentioned by Hicks, is that the assumption about a single consumer can be generalised to consumers as a whole only on the further assumption that the distribution of incomes remains unchanged; in order to get a valid measure of change in real income, the change has to be the same for everybody.") Regarding this latter assumption, it may be worth while to point out that in one context of thinking about the problem of defining an increase of national income this qualifying assumption is not needed (the context of Professor Hicks' 1940 article), and in the other context, where it is certainly needed (of which one might perhaps speak as the Pigouvian context), to say a word or two more about its implications.

The reason why Professor Hicks did not need to make the assumption is clear, I think, as soon as we take his statement, that " prices which actually confront the consumer " should be taken as weights [1] " because prices give us some indication of marginal utilities," in the context of his article as a whole. It will be remembered that he was there concerned with defining an increase of social income independently of welfare and hence of distribution changes (independently in the sense that one might speak of an increase of social income where there was no increase, even a decrease, in welfare). The crucial condition about the equality between the ratios of marginal utilities and the ratios of prices (tangency of indifference curve to price-line)

[1] Professor Hicks added here the words, " when measuring social income as an index of social welfare." Perhaps it would have helped to avoid misunderstanding if he had said here " an index of *potential* economic welfare " (to borrow Professor Robertson's phrase).

was necessary to show what index-number data would suffice to demonstrate that a single (consistent) individual was better off in one situation than in another. Without it there would have been no point in defining an increase in social income in the way that the article proceeded to do; since this consisted in taking as the criterion of an increase between situations 1 and 2 the possibility of some income distribution in the former that would have made all individuals less well off than they severally were in the latter. And if index-number data could give no clue to whether a single individual was better off, they could give no indication of whether *all* individuals were better off than they might have been. But since this definition made no reference to any summation of individual utilities into a social total (and was, indeed, explicitly designed to avoid doing so), no assumption about income distribution was involved. One can say this much, however: that this way of defining an increase of social income was virtually equivalent to defining it as a change of output which *would* have led to an increase of welfare if income distribution in the first situation had been the same as the income distribution that existed in the second situation.

If one does not believe, however, that a change in national income can be satisfactorily defined in this (or some analogous) way, one has to fall back on the kind of notion that Mr. Nicholson evidently has in mind, according to which an increase of national income is identified with an increase in the total utility enjoyed by all individuals, and is measured in terms of this. For this purpose some assumption about distribution is necessary, since the summation of individual utilities is involved:[1] that is, it is necessary if we are to use an increase of values, when appropriately measured (*i.e.*, $\Sigma P_2Q_2 > \Sigma P_2Q_1$), as indicating an increase in utility, and *a fortiori* if we are to take it as affording a measure of the order of magnitude of such an increase.

Although consumption of various commodities by each individual will be carried to the point where the tangency-condition is fulfilled, an assumption about distribution is needed because these commodities will be consumed by different individuals in different proportions owing to differences of income (as well as of taste), and a given value-increase of output will have a quite different utility-content according as the proportions in which outputs are changed conform to the consumption pattern of the poor or of the rich. Thus, valued at market prices, a change of output may represent very different changes in the real income of the community; and it is even possible for values to increase and real income to fall (*e.g.*, when the output of wine rises and that of bread falls).

Changes in relative outputs may be caused either by a shift in the distribution of money income, and hence in the pattern of demand, or by a change in relative costs. If Mr. Nicholson's condition is interpreted simply as meaning constancy of distribution of *money* income, then the above

[1] An assumption which, it will be remembered, Professor Pigou made in discussing the measurement of national income in terms of "satisfaction." If the solipsist will not permit the notion of such an aggregate of utilities (or of individual "better-offnesses"), then without some version of the compensation principle he must, of course, keep silent about national income.

difficulty remains for any output-changes resulting from a change in relative costs; except that the possibility of an increase of values being correlated with a decrease in real income is excluded [1] if the change in productivity is such as to decrease the output of no commodity in the course of increasing the output of some.[2] Mr. Nicholson's condition must, therefore, be interpreted to mean that all output-changes are quite neutral in their distribution-effect, so that the real incomes of rich and poor are affected equally (" the change to be the same for everybody "). Interpreted in this way, it must imply that, with a given initial distribution, changes of output, to be significantly measurable in terms of market prices, must be always of the same composition (or rather, of a composition which, if it changes, changes in a prescribed way).[3] This, surely, represents a very drastic restriction on measurement in market prices—more drastic even than Mr. Nicholson's statement at first glance implies?

To labour this point might seem a waste of time, were not misunderstanding quite common, apparently, about the precise significance of the tangency-condition as a justification for using market price valuations in measuring social income. For example, the tangency-condition has been taken to imply " the identification of equal value units with equal amounts of consumer satisfaction." From what has been said above, it should be clear that such an " identification " is only possible for changes in total output with very severe qualifications, and certainly cannot imply that " equal value units " of bread and of wine added to the community's supply of these things represent equal increments of utility when income distribution is unequal. One writer, feeling perhaps that such an identification must be associated with some kind of *optimum* situation, goes so far as to suggest that it applies only in conditions of " consumers' sovereignty as distinguished from consumers' choice "; which I take to mean that all the so-called " optimum conditions " have to be fulfilled (*other* than distribution-conditions presumably), and prices be proportional, not only to consumers' marginal rates

[1] Provided, of course, that changes in taxation or in the degree of monopoly do not have the effect of raising the price of some commodity.

[2] For example, this possibility is not excluded if, say, the output of bread is at all reduced in augmenting the supply of wine. At first glance it might seem as though the tangency-condition, which applies to all consumers including the poorest, would suffice in this case to exclude this possibility because it ensures that the price-ratio of bread and wine shall express the substitution-equivalent of wine for bread even to the poorest consumers. But if there is any fall in the output of bread, there will be an income-effect on poor consumers of the rise in bread-prices which may prevent them from substituting at the margin wine for bread along the same indifference curve. To put it differently: even if the Laspeyres price-index $\left(\frac{\Sigma P_2 Q_1}{\Sigma P_1 Q_1}\right)$ for consumption in general has fallen relatively to the ratio of money expenditures in the two situations (which is the condition for $\Sigma P_1 Q_2 > \Sigma P_2 Q_1$), it does not follow that a Laspeyres price-index appropriate to the quantities of bread and wine consumed by the poor in Situation I has fallen relatively to the ratio of their money expenditures (which must be uniform for rich and poor with a constant distribution of money income).

[3] Prescribed, *i.e.*, by differences in the income-elasticities for different commodities, when real income rises with distribution of money incomes constant; or alternatively by the condition that changes in the composition of output and accompanying changes in money incomes must be such as to keep movement along a " compensation line."

of substitution, but also to marginal costs.[1] Such a conclusion evidently rests on a misunderstanding of the tangency-condition and its implications (this condition requiring no more for its fulfilment than free and unrationed consumers' spending, *plus* sufficient responsiveness of price to demand to preclude shop-shortages and queues; and implying a comparability of value-changes and welfare-changes only in the very qualified sense we have described). The misunderstanding may well have been connected in some way with the common "delusion" mentioned by Professor Hicks that a welfare-measure must be simultaneously a productivity-measure. That this kind of restriction upon the use of market prices should be suggested, while the difficulty about income distribution is ignored, is, at any rate, curious, and may serve as some justification for stressing in this Note what many of those who were reared on *The Economics of Welfare* may regard as the obvious.

What is less obvious is that a factor-cost measurement, in a productivity context, is subject to the same limitation. Here the rôle played by the equality of the ratios of marginal productivities and of factor prices is the provision of a standard whereby heterogeneous factors can be equated to form a cost-unit, and the productivity of a composite dose of them be given a meaning (for small marginal changes). But the factor prices as well as the marginal productivities (which are of course expressed in *values*) are derived from market prices; and the notion of a factor-cost aggregate has always an implicit reference to market prices and is meaningless without the consumers' tangency-condition (otherwise the particular ratio of factor prices selected would be as arbitrary as any other ratio). This form of measurement can therefore bypass neither the ordinary index-number problem nor the income-distribution condition, as some practitioners of "net value-added weights" and "adjusted factor cost" (*e.g.*, in comparative analysis of components of national income) seem to have supposed.

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THE INDUSTRY AND THE MARKET

In commenting on Mr. J. N. Wolfe's article on "The Representative Firm,"[2] Mr. J. H. Davies[3] writes: "Any attempt to reconcile the views of those economists who regard the 'group and the industry as useless concepts' and those of business-men, who still seem to think and act as if there were such things is to be commended." The divergence of views to which he refers seems to arise from an attempt (on the part of economists) to define an industry in terms of the market for a commodity. A commodity may be regarded as "a chain of substitutes surrounded on all sides by a marked

[1] Cited in the Economic Journal, December 1955, p. 705. The conclusion drawn was that valuation of output at market prices loses its point in a planned economy (where these conditions were assumed not to be fulfilled).

[2] Economic Journal, June 1954.

[3] "The Industry and the Representative Firm," Economic Journal, December 1955.

'gap.' " [1] That commodities in this sense do exist is obvious, though it is not possible to divide all production neatly up into discrete commodities. An industry may be regarded as a group of firms having certain technical characteristics in common. They may be bound together by using similar methods of production, dealing with the same suppliers or supplying the same dealers, drawing upon the same labour force, or merely by a historically determined sentiment that they *are* members of an industry. " A precise and meaningful definition of an industry " [2] is a vain objective. There is no advantage (and much error) in making definitions of words more precise than the subject matter that they refer to. But rough working demarcations of industries are required, for instance, by a group of business-men considering who is eligible to join a trade association or by the compilers of the Census of Production.

It is very rare (if not unknown) for an industry, in this everyday sense, to be selling one commodity. To take an obvious example, there is only a tiny fringe of substitutability in demand between men's, women's and children's shoes, and it is reasonable to regard them as distinct commodities. The Boot and Shoe Industry (producing mainly with leather) is a fairly definite entity, supplying these three commodities. Some firms in the Industry specialise on commodities, but many produce all three. The three commodities are also supplied by the products of the Rubber Industry. A few firms straddle both Industries while supplying all three markets. On the other hand, each industry supplies commodities (leather goods and rubber goods) which are extremely remote from shoes in the chain of substitutes.

Questions relating to competition, monopoly and oligopoly must be considered in terms of markets, while questions concerning labour, profits, technical progress, localisation and so forth have to be considered in terms of industries. Once this is recognised most of the cross-purposes referred to by Mr. Davies can be avoided.

In the far-off pioneering days of Imperfect and Monopolistic Competition it was necessary to make very drastic simplifying assumptions to get to grips with problems that then seemed strange and mysterious. For instance, I assumed one-product firms and clearly demarcated commodities. An economy conforming to these assumptions would consist of one-market industries. After more than twenty years the argument should surely have got beyond this primitive stage of development.

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A NOTE ON THE BALANCED-BUDGET MULTIPLIER

I

THE object of this note is to provide a simplified proof of the generalised balanced-budget multiplier theorem. It has been pointed out by various writers that the famous Haavlemo theorem, which proved that the balanced-

[1] *Loc. cit.* [2] *Ibid.*

budget multiplier is equal to unity, is a very special case. The multiplier can be positive, zero or negative.[1] The proof offered by Baumol and Peston is such a general one that it is difficult to identify in their multiplier formula the normal inter-sector flows found in the system of social accounts implicit in the Keynesian model. The proof offered here is less general, in the sense that particular inter-sector relationships are assumed, but will perhaps be more readily understood by those who are familiar with Keynesian models. The proof is implicit in Mr. Turvey's analysis, and only requires minor elaborations and modifications of his system.

II

We shall assume: (*a*) a closed economy in which national income at factor cost and factor payments to households are identical, *i.e.*, we assume that business saving is zero; (*b*) a balanced budget made up of government expenditure on goods and services plus transfer payments as receipts and direct taxes and expenditure taxes (— subsidies) as payments.

Thus

$$Y \equiv C + I + G_c - T_i$$

where Y = national income of factor cost; C = consumption of households at market prices; I = investment by firms at market prices; G_c = government purchases of newly produced goods and services from firms at market prices; T_i = taxes on expenditure—subsidies.

Also $$G_c + R \equiv T_d + T_i \equiv G$$

This is the balanced-budget condition where R = transfers from government to households; T_d = direct taxes paid by households to government; G = total government receipts (or payments) on current account.

We shall further assume: (*a*) that T_d, T_i, R, G_c and I are autonomous; (*b*) that the marginal (= average) propensity to consume of both direct tax-payers and transfer receivers is the same [2] and that transfers are not subject to tax; and (*c*) that there is " money illusion " in the consumption function.[3]

Putting these assumptions into symbolic form, we have

α = marginal (average) propensity to consume of households, where $\alpha < 1$

$I = \overline{I}$, $G_c = \overline{G}_c$, $T_i = \overline{T}_i$, $T_d = \overline{T}_d$, $R = \overline{R}$

C = proportion of income spent by households after receipt of transfers and payment of direct taxes.

$$= \alpha[Y + R - T_d]$$

[1] See particularly, R. Turvey, " Some Notes on Multiplier Theory " (*American Economic Review*, June 1953, pp. 285–6) and W. J. Baumol and M. H. Peston, " More on the Multiplier Effects of a Balanced Budget " (*American Economic Review*, March 1955, pp. 140–8).

[2] We shall modify this assumption later.

[3] That is to say that expenditure on goods and services by households out of income is maintained only in money terms. For a fuller account of the implications of this assumption, compared with others, see Turvey, *op. cit.*, p. 285, and E. Cary Brown, " Analysis of Consumption Taxes in Terms of the Theory of Income Determination," *American Economic Review*, March 1950, pp. 74–89.

We now substitute these assumptions in our basic identity and have

$$\begin{aligned} Y &= \alpha[Y + \overline{R} - \overline{T}_d] + \overline{I} + \overline{G}_e - \overline{T}_i \\ &= \frac{\overline{I} + (\overline{G}_e + \alpha R) - (\alpha T_d + T_i)}{1 - \alpha} \quad . \quad . \quad . \quad (1) \end{aligned}$$

But $R = G - G_e$ and $T_d = G - T_i$, if the balanced-budget condition holds. Accordingly we can re-write our equation as follows:

$$Y = \frac{(G_e - T_i)(1 - \alpha) + \overline{I}}{1 - \alpha}$$

Furthermore, if $\Delta I = 0$, then

$$\Delta Y = \frac{(\Delta G_e - \Delta T_i)(1 - \alpha)}{1 - \alpha} \quad . \quad . \quad . \quad (2)$$

or more simply

$$\Delta Y = \Delta G_e - \Delta T_i$$

Thus the balanced-budget multiplier will be positive, zero or negative, depending on whether the increment of government expenditure on goods and services is greater than, is equal to or is less than the increment of indirect taxes.[1] For a given marginal propensity to consume of households, it simply depends on the composition of government expenditure. That is all that is required in order to reduce the Haavlemo theorem to a special case.

The formula can be elaborated in order to take account of the more realistic case where the marginal propensity to consume of direct tax-payers and transfer receivers is different, it being assumed that direct tax-payers are excluded from receiving transfers by, say, a means test, and transfer receivers are below the tax-exemption limit.

Let β = the marginal (= average) propensity to consume of direct tax-payers

and γ = the marginal (= average) propensity to consume of transfer receivers.

Let z = the proportion of national (= factor) income going to direct tax-payers

and x = the proportion of national (= factor) income going to transfer receivers. Also $z + x = 1$.

Then $C = \beta(zY - \overline{T}_d) + \gamma(xY + \overline{R})$

and

$$\Delta Y = \frac{\Delta G_e(1 - \gamma) + \Delta G(\gamma - \beta) - \Delta T_i(1 - \beta)}{1 - (\beta z + \gamma x)} \quad . \quad . \quad (3)$$

III

It may be convenient to demonstrate the Haavlemo case for both the simple and more complicated models shown in formulas (1) and (3) respectively.

[1] This may also be written $\Delta Y = \Delta T_d - \Delta R$ where $G_e = G - R$ and $T_i = G - T_d$.

In the Haavlemo case formula (1) is reduced to

$$\Upsilon = \frac{\bar{I} + G - \alpha T_d}{1 - \alpha}$$

or, when $\Delta I = 0$ to $\frac{\Delta \Upsilon}{\Delta G} = 1$

This is because there are no transfers and no indirect taxes in the model, so that $\overline{T}_i = 0$, $\overline{R} = 0$, and so $G_c = T_d = G$.

Formula (4) requires the additional condition that $\beta = \gamma < 1$ and reduces to

$$\Delta \Upsilon = \frac{\Delta G(1 - \beta)}{1 - \beta(z + x)}$$

As $z + x = 1$, then $\frac{\Delta \Upsilon}{\Delta G} = 1$

IV

As governments generally control tax *rates* and not *yields*, then these models suffer from the disadvantage that they do not allow any expansion of incomes produced by the balanced budget to induce further changes in tax yields and, in consequence, further changes in government expenditure. If G_c is given *ex ante*, then the yield of taxes is determined *ex ante*. This difficulty can be overcome by a very simple device suggested to me by Mr. A. C. L. Day, which can be illustrated by considering the Haavlemo case again. From an initial equilibrium with a balanced budget, we assume that direct taxes are increased, for an initial income, by δT_d, and G_c is simultaneously increased by the same amount. (The initial disturbance might equally well be an increase in autonomous investment). Writing $0 < t < 1$ where t is the direct (proportional) tax rate, then, as income increases on account of the initial increase in government expenditure on goods and services, there is a further induced increase in direct taxes equal to $t\Delta\Upsilon$, and, given the balanced-budget condition, the whole of the additional receipts is spent. { Given that $0 < t < 1$, then the rise in income must bring about a further rise in both taxes and government expenditure, so that the balanced-budget multiplier must be greater than one. Writing our balanced-budget conditions as $\Delta G_c = \delta T_d + t\Delta\Upsilon$, then by simple substitution in our model we shall find that $\Delta\Upsilon = \frac{1}{1 - t} \cdot \delta T_d$. This reduces to the simplified Haavlemo case if $t = 0$.

V

Obviously, the basic model will be modified if more complicated inter-sector payments are introduced and if the number of sectors is increased. For example, we can assume that firms save and are subject to corporation taxes without having to increase the number of sectors. We could introduce a Rest of the World account and include government transfers to and from

abroad as items in it. All these complications serve to warn us that in practical policy each individual situation has to be investigated separately. But we require no more than two additional government transactions on current account transfers and indirect taxes, in order to demonstrate that the *sign* of the balanced-budget multiplier can be positive, zero or negative. The conclusions of the general proof are therefore reached without having to go much beyond the text-book formulations of the theory of income determination.

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BALANCED GROWTH ON STATIC ASSUMPTIONS

IN the June 1955 issue of the ECONOMIC JOURNAL Mr. Marcus Fleming subjects the " doctrine of balanced growth " to a critical examination based on assumptions that seem to me not altogether relevant and appropriate. He refers to my *Problems of Capital Formation in Underdeveloped Countries* (1953) as one of three expositions of the doctrine, the other two being the well-known articles by Allyn Young and Rosenstein-Rodan in this JOURNAL in 1928 and 1943.

After his own—generally fair—presentation of the doctrine, Fleming proceeds on p. 245 to examine it: first, supposing that labour is the only factor of production and is *in fixed supply*; next, supposing that there are several factors, each *in fixed supply*. This enables him to say that " whereas the balanced-growth doctrine assumes that the relationship between industries is for the most part complementary the limitation of factor supply ensures that that relationship is for the most part competitive " (p. 246). The point stands out again in the final summary:

> " We have concluded that the argument as usually presented overemphasises the repercussions on the demand for, and ignores repercussions on the costs of, the other industries, and that, in an economy where factors of production are in fixed supply, the introduction of unprofitable though efficient large-scale production in one industry is more likely to reduce than to increase the profitability of other industries " (p. 254).

We are not told who ever presented the balanced-growth argument on the assumption of fixed factor supplies. I fully agree that *on these terms* the argument does not make sense. Any deliberate expansion of one industry, instead of helping others, hurts them by drawing on their factors, and must lead away from optimum allocation of the given stock of resources. This is even intuitively fairly obvious, which is probably why no one has advanced the case on these terms.

Having dealt expertly with the allocation of fixed factor supplies, Fleming changes his approach: " In order really to salvage the doctrine . . . it is

necessary to drop the assumption that the supply of factors of production is fixed in favour of the assumption that the supply varies positively with real factor prices" (p. 248). The salvaging is only needed for his own previous construction. And the salvaging operation to which he turns is rather cramped by a framework that remains essentially static, assuming in effect a given functional relationship between factor supplies and factor prices. There follows a consideration of factor-supply elasticities, which shades into a more dynamic discussion where his findings are correspondingly less unfavourable. Towards the end (p. 252) he momentarily approaches my own initial set-up by positing a perfectly elastic supply of capital, in which case he grants the mutually supporting nature of investments in different industries. But this appears merely as a qualification appended to a negative verdict.

A closed system of variables interlinked along given schedules still need not favour expansion, and the switch made later from interest elasticity to income elasticity of capital supply does not help. It may be that "any increase in real income associated with the expansion of capital and output at *A* would tend to raise the domestic supply of *saving* and gradually and cumulatively the domestic supply of *capital*" (p. 253). But the initial capital-expansion at *A* is left unexplained and must come from outside the system.

Instead of trying, as he says at the start, to "reconstruct the logical presuppositions" of the doctrine, Fleming examines it, in the main, under a series of static assumptions of his own making. The object of this procedure is not clear. The word "growth" alone hints that something more is involved than, *e.g.*, the rules of allocating a given factor stock (which, in their proper place, are not to be disparaged). This is all the more evident if attention is paid to the context in which the balanced-growth idea has turned up in the literature.

My own assumption, in Chapter I of my book, was that of a given labour force being equipped with an increased stock of capital. (This appears even in the sentence Fleming quotes on p. 242.) My thesis was, in substance, that if all the capital were applied to, say, shoe production, sharply diminishing returns would soon set in, while if it were distributed over a range of industries returns need not diminish and might increase. "People working with more and better tools in a number of complementary projects become each others' customers." In poor countries, I suggested, small and inelastic consumer demand is apt to make investment in any *single* project unattractive in private business terms. This leads up to a study of the peculiar pattern of foreign entrepreneurial investment in such countries, a pattern consistent with my view of the relation between "The Size of the Market and the Inducement to Invest" (the title of Chapter I). It is in this context that I make use of the notion of balanced growth.

My assumption of an increase in capital supply and in capital intensity is the same as Allyn Young's, though he puts it in Böhm-Bawerkian terms—capitalistic or roundabout methods of production. Perhaps this is what

Fleming's own "vertical" economies amount to, which interestingly enough, he, too, describes in Austrian terms: stages, intermediate products, original factors (pp. 249–50).

Far from assuming fixed capital supplies, my opening chapter—being concerned with investment *incentives* alone—assumes away any inelasticity in the supply of capital. It concentrates on the demand for capital, as exercised by individual entrepreneurs, and abstracts from any supply difficulty. This is made clear at the beginning and the end of the chapter, though I admit that the conditions should have been stated more precisely, with some reference also to interest rates. The aim of this set-up was to keep it open for policy considerations. Later chapters deal with the supply side not only in terms of elasticities and propensities, but especially with reference to—national and international—policy measures relating to the supply of capital; and if these are to be interpreted in schedule terms at all, they can be thought of as *shifts* in capital supply conditions.

This framework, as well as the discussion within it, undoubtedly has its shortcomings. Thus balanced growth enters only on one side of the picture and takes an increased capital supply for granted. But that is not the point of Fleming's criticism, as I understand it. His criticism is that the balanced-growth argument does not stand up on assumptions on which, so far as I know, it was never put forward.

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A NOTE ON RETAIL DISTRIBUTION IN NEW ZEALAND

IT may be of interest to carry a little further the international comparison of distributive trades made by Lady Hall and Mr. Knapp in a recent ECONOMIC JOURNAL.[1] The first census of distribution in New Zealand, taken in 1953, provides enough information to make this worth while. No attempt is, of course, made to duplicate all Lady Hall's and Mr. Knapp's calculations, but we present our results in such a way as to facilitate comparison.

The categories of shops and trades in the New Zealand census do not accord exactly with the British nor is the coverage as wide, so that complete comparability between New Zealand and British results cannot be achieved. For reasons mentioned elsewhere,[2] comparison with the United States and Canada is even more difficult. The most important groups of the British census not included in the New Zealand survey were XI (coal, builders' materials and corn group) and XVIII–XIX (motor vehicle dealers and repairers, cycles, accessories and garages group). In order to make international comparisons easier we have expressed the number of shops in the remaining groups as percentages of the total number of shops excluding these

[1] "Numbers of Shops and Productivity in Retail Distribution in Great Britain, the United States and Canada," ECONOMIC JOURNAL, March 1955.

[2] *Ibid.*, p. 73.

groups in Great Britain, the United States and Canada. Table I shows the result of these calculations.

In the structure of its retail trade New Zealand clearly resembles Great Britain more closely than either the United States or Canada. Grocers'

TABLE I

Retail and Service Trades : Numbers of Shops in New Zealand, Great Britain, United States and Canada

Kind of business by major groups of the British *Census of Distribution* (1950).	New Zealand 1953		Great Britain 1950.	United States 1948.	Canada 1951.
	Number of shops.	% of total.			
				% of totals.	
I. Grocery group	3,770 [1]	17·1	21·0	25·4	24·0
II. Other food retailers	3,582	16·3	20·6	9·1	11·4
III. Confectioners, tobacconists and newsagents	1,974 [2]	9·0	10·8	3·5	8·0
IV. Clothing group	3,215	14·6	14·6	9·7	14·0
V. Hardware group	832	3·8	5·0	5·0	5·3
VI. Booksellers and stationers	748 [3]	3·4	1·5	0·5	0·5
VII. Chemists' and photographic goods group	664	3·1	2·7	3·8	3·2
VIII. Furniture group	958	4·3	2·6	3·9	2·1
IX. Jewellery, leather and sports goods group	637	2·9	2·5	2·7	2·7
X. General group [4]	183	0·8	0·2	1·5	1·4
XII. Other non-food retailers	2,011	9·1	1·8	3·4	2·4
XIII. Catering group	1,634 [5]	7·4	7·3	12·4	9·6
XIV. Hairdressers	735	3·4	4·9	11·1	8·8
XV. Funeral furbishers	96	0·4	0·5	1·2	0·7
XVI. Portrait photographers	249 [6]	1·1	0·3	0·8	0·7
XVII. Repairers group	730	3·3	3·7	6·0	5·2
TOTAL	22,018	100	100	100	100

Sources : *New Zealand Census of Distribution*, 1953.
ECONOMIC JOURNAL, March 1955, p. 73.

[1] Includes dairies.
[2] Excludes newsagents and dairies.
[3] Includes newsagents.
[4] Departmental and variety stores only.
[5] Includes hotels.
[6] Includes commercial photographers.

shops in New Zealand are relatively fewer than in any of the other countries, but the reason for this is simply that many other stores also sell groceries. Thus no fewer than 944 general stores (group XII) and 176 other stores also deal in groceries. The number of booksellers " and stationers " shops in New Zealand is relatively high, but as this group includes newsagents, this fact may not be significant. Furniture stores and other non-food retailers are, also, relatively more numerous, but hairdressers scarcer.

The number of shops (in our restricted sense) in relation to population may be seen from Table II, in which we also show the proportions for groups I to XII only, *i.e.*, excluding service trades. According to both classifications, New Zealand shops cater for more people than British but fewer than

North American. The relatively greater importance of service trades in the United States and Canada is clearly shown.

In the absence of estimates of the purchasing-power equivalents of the £N.Z. we cannot compare, with any accuracy, volumes of goods and services sold in New Zealand shops and those sold in Great Britain. If, however, we take £stg. = £N.Z. as an approximate estimate of the purchasing-power parity we find that *per capita* sales in New Zealand amounted to £175 and in Great Britain only £102—a ratio of 1·7. This difference is too large to be explained by an inappropriate exchange rate only, and we must conclude that New Zealand shops handled a considerably greater volume of goods in 1953 than did British shops in 1950. It will be recalled that there were also fewer shops in New Zealand in relation to population than in Great Britain.

TABLE II

Population in Relation to Retail Shops and Services, New Zealand, Great Britain, the United States and Canada

Country.	Population, millions.	Shops, thousands.		Number of people per shop.	
		All groups.	Groups I–XII.	All groups.	Groups I–XII.
New Zealand, 1953 . .	2·01	22·0	18·6	91	108
Great Britain, 1950 . .	49·1	614	511	80	96
United States, 1948 . .	146·1	1534	1048	95	139
Canada, 1951 . . .	14·0	145	108	97	130

Sources: *New Zealand Official Year Book*, 1954.
New Zealand Census of Distribution, 1953.
ECONOMIC JOURNAL, March 1955, pp. 73, 74.

From the above considerations we see that the volume of retail goods distributed per shop in New Zealand is greater than in Great Britain. What of productivity per person? Again assuming that the current exchange rate between the countries is equal to the purchasing-power parity of the currencies, we find that average sales per person engaged was £3,709 in New Zealand and £2,173 in Great Britain for all shops, and £3,935 and £1,998 respectively for groups I–XII only. It would appear that labour productivity in the service trades in Great Britain is higher than in retailing, whereas the opposite is the case in New Zealand.

The results which we have obtained are in some ways surprising. One might have expected retail shops to be relatively more numerous in New Zealand than in Great Britain because New Zealand is much more sparsely populated. That the volume of sales per person is higher in New Zealand is not so surprising, as it is generally accepted that real *per capita* income is higher there than in Great Britain. The most interesting comparison, however, is that of volume of sales per person engaged. A New Zealand retail employee, it seems, distributes about 1·9 times as much as his British counterpart. We may note that according to Lady Hall and Mr. Knapp [1]

[1] *Op. cit.*, pp. 80, 81.

in the case of the United States and Great Britain the productivity ratio is nearly 2 and the corresponding ratio of real purchases per person nearly 2·4. As with the structure of retail trade, New Zealand distributive services seem to lie between those of Great Britain and North America in terms of volume of sales per shop and per person engaged.

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OFFICIAL PAPERS

The Royal Commission on the Taxation of Profits and Income

The Royal Commission on the Taxation of Profits and Income was appointed on January 2, 1951

> " to inquire into the present system of taxation of profits and income, including its incidence and effects, with particular reference to the taxation of business profits and the taxation of salaries and wages . . ."

The Third and Final Report [1] of the Commission was signed on May 20, 1955, by the Chairman and nine members: on the same day a Memorandum of Dissent was signed by the remaining three members. The Commissioners were first told that their recommendations must be such as on balance to leave the revenue unchanged, but later (March 1952) they were given a little more rope: if recommendations were made which would reduce the revenue they were to assign priorities. In the event the Commission tactfully, but firmly, refused to do this, beyond saying that if they cannot have all of each recommendation, they prefer some of many to all of a few. Twice the Commission sought a ruling on their terms of reference. To the question could they consider taxes on capital gains the Chancellor, Mr. Gaitskell, replied Yes. To the question could they consider an expenditure tax, his successor, Mr. Butler, replied No, on the grounds that they could not examine such a tax without also examining " on fairly fundamental lines the scope and purposes of indirect taxation " as well. This argument is not wholly convincing. It would have been possible to compare the merits of a tax on spending with those of the present system of taxes on income (or a modified system which included capital gains) on the assumption that revenue was not to be changed. Of course, if an expenditure tax had received support from the Commission the further question whether some or all of indirect taxation ought then to be shifted and absorbed by an increase in

[1] Cmd. 9474, June 1955. The First Report, dated February 13, 1953 (Cmd. 8761), dealt with certain problems of the taxation of overseas profits and relief from double taxation. The Second Report, dated April 9, 1954 (Cmd. 9105), dealt with " problems of progressive taxation as applied to individuals and the allowances, reliefs and rates of tax that form part of the system of progression," taking for granted for the time being the existing concept of taxable income (*i.e.*, excluding capital gains). There were important minority reservations to this report, to which was appended the important study undertaken by the Social Survey in 1952 of P.A.Y.E. and incentives.

the *rates* of an expenditure tax would naturally follow. Be that as it may, the enterprise of Mr. Kaldor in publishing his study of an expenditure tax [1] ensures that in the ensuing debates the case need not go by default.

The Commission added a further restriction of their own: "We have taken it as our general premise that there will not be any marked decrease or increase in the purchasing power of money in the United Kingdom" (23).[2] Whether this assumption is compatible with the recommendations of the Majority Report is a question to which we must return, but it was obviously necessary to make a definite assumption about the future movement of the general level of prices as a background to the detailed matters treated by the Commission.

There is not room here even to list the thirty-four chapter headings of the Majority Report, which give rise to ninety specific recommendations. Since this note will be exclusively concerned with two major questions, on which the dissenting members—it will be convenient to call them the Minority—disagreed with the Majority, it should be recorded that they endorsed twenty-one of the Majority recommendations. They dissented specifically from ten of the Majority recommendations, and added thirty recommendations of their own, to replace a large number of those of the Majority. It should also be recorded that several of the Majority signatories entered reservations on one or more specific points.

The two most important issues for domestic economic policy are a tax on capital gains and the tax on corporate profits. The Majority recommend against the former: the Minority recommend that capital gains of individuals should be subjected to income tax, but not to surtax, and that capital gains of companies should be subjected to the new corporation profits tax which they propose. The Majority recommend that the present "profits tax" discrimination between the tax on distributed and undistributed profits should be abolished and there should be instead a flat-rate tax on profits (profits, as now, also to be subject to income tax at the standard rate). The Minority recommend that if there is not to be a tax on capital gains, the discrimination should stay. If, however, their proposals to tax capital gains are accepted, they recommend that corporate profits should no longer be subject to income tax at all, but should pay a flat-rate tax of 40%, to be reduced to 33⅓% to offset increasing revenue from the tax on capital gains. Although companies would no longer in any sense *pay* income tax, they should continue to act as agents of the Revenue in collecting standard-rate income tax on dividends paid to shareholders.

Capital gains as such are not included under the present tax code in the United Kingdom, which is based on the notion of different "sources" of income. It distinguishes between the fruit and the tree, taxing only the former, except in the case of those whose business it is to deal in "trees." If the tree grows, there will be more fruit, and that is taxed. In terms of

[1] N. Kaldor, *An Expenditure Tax* (Allen and Unwin, 1955).

[2] References to the Majority Report are given by the paragraph numbers. Numbers of paragraphs in the Memorandum of Dissent are preceded by the letters MD.

this metaphor the case for including capital gains within the concept of income is that the growth of the tree increases the power to spend, or save, of the owner, who, besides picking fruit, can at any time lop off a bough from the tree and sell it.

If the kinds of property which yield capital gains were distributed proportionately among tax-payers, and if the gains themselves were fortuitous, then their exemption might not seem inequitable. The mere fact that gains were fortuitous would not of itself be an argument against taxing them. Windfalls do increase the power of the recipient to spend or save, and to tax them would not, precisely because they are windfalls, have adverse effects on production. Nevertheless, the various practical difficulties which arise, and to which we refer later, might in this instance decide the issue. But capital gains are concentrated in the hands of owners of property, especially of equity shares, and furthermore the distribution of property among those who have any is very skew (much more so than income), so that the exemption from tax constitutes a discrimination in favour of a particular class of tax-payer. Moreover, as the Minority point out, the extent to which rewards take the form of tax-free capital gains rather than taxed dividends is not fixed by Nature but can be, and is, manipulated by the tax-payer, and they give examples of how this can be done.[1]

The Majority, to borrow the tax terminology, evade the latter argument by not making a declaration at all. And they avoid expressing an opinion on the question of principle, by turning it into another one to which they give a negative answer. If, say the Majority, the principle were conceded one must find a method to bring gains within the tax net. To base assessments on *accruals* is administratively impossible: one could tax gains only when they are *realised* (*e.g.*, by sale of an asset or on the death of the owner). But this raises a whole set of issues which could be settled only by arbitrary rules. And they conclude: (i) if a capital-gains tax is regarded as a means of taxing expenditure which is left untaxed by the present system, it does not hit that object at all squarely; and (ii) if a capital gain is fairly to be regarded as income the recipient ought to be taxed on it at the full progressive rate, but, on the other hand, if it cannot be so regarded there is no good reason why his capacity to pay income tax or surtax should be thought to be increased by its receipt. The first of these arguments is, of course, irrelevant to the terms of reference of the Commission: the same might be said in some degree about income tax and lead naturally on to the argument that expenditure would be a fairer basis for taxation than income, with or without capital gains. The second argument is not very convincing: it may be, as is indicated in the important memorandum of the Board of Inland Revenue on this subject, which is appended to the Report, that in particular instances, to bring under income tax and surtax gains which have

[1] A further argument implicit in the Minority Report, and more fully developed in Mr. Kaldor's book, is that one of the aims of surtax was to limit the consumption of the rich and that it has not been conspicuously successful in this object. The sluggishness of the yield of surtax, by comparison with the buoyancy of other sources of revenue, is certainly disquieting.

hitherto been untouched would be virtually confiscatory, so that it might be wise to temper logic with expediency. To put the point differently, both the extremes of 95% tax at the margin and zero tax involve "inequities" of different kinds: an intermediate rate of tax on capital gains might also be shown to involve inequities and yet be better than either extreme. My own view is certainly that the inequity of not taxing capital gains is strong enough to make *some* tax on them desirable, even if it falls short of the complete assimilation of accrued capital gains with income.

A word before we consider some of the practical problems of taxing income so defined. Capital gains should, presumably, include all accretions of wealth, including gifts, football-pool winnings and the like. Capital losses should be taken into account as well as gains. The objections to taxation on *accruals* basis are several. The most important are: (i) It would require an annual valuation of all assets, a large and extremely difficult administrative task which would give rise to endless disputes and litigation. (ii) With *progressive* rates of tax, annual fluctuations in capital values could easily lead to a tax-payer paying substantial taxes on capital gains, even though at the end of a period of years the value of his wealth had returned to what it was at the beginning. For these reasons both the Minority and the Majority agree that any tax would have to be on the basis of *realised* gains and losses. But if gains are taxed only when they are realised, the tax liability would be the same whether the whole of a gain had accrued within the tax-year, or had been accruing, not necessarily evenly, over a long period of years. This would not matter if there were a separate, unchanging, flat-rate of tax on gains, but it would matter very much indeed if present income tax and surtax were applied to realised gains. Either some form of averaging over a period of years must be introduced, or else the full assimilation of gains to income abandoned, and a flat-rate on gains adopted as an approximation to the ideal. The objection to the former is administrative. Take the case of a gain from the sale of an asset acquired twenty years previously. Ideally one should estimate the change in value of the asset for each year since it was acquired, and, in accordance with the income tax and surtax rates at the time, re-assess the tax-payer for each of the twenty years. This, surely, would be an impossible task. One would have to compromise and simply mitigate the progressiveness of income tax and surtax by going back for a limited period only, say five years. Even this involves a considerable administrative burden, which the Minority accept as decisive against it. But once it is admitted that one would have to depart from the ideal, by averaging for a *limited* period, why is it necessary to go backwards and not forwards? That is to say, the capital gains realised in a particular year are recorded at, say, £1,000. Then the Inland Revenue simply put down £200 for each of the next five years to be added to whatever income is earned in those years. It is true that if income tax or surtax are changed the tax-payer may pay more, or less, than he would have done if the backwards averaging were adopted. But since the latter method was in any case in some degree arbitrary, and since also large changes in income- and surtax rates are not

foreseeable, such a scheme would not seem to be substantially less equitable. It might also be possible to allow an extension of the five-year period in the case of exceptionally large gains where evidence can be produced that they accrued over a longer period in the past. All this is largely avoided if the Minority's proposal of subjecting capital gains to income tax only is adopted. But this reduces only, without eliminating, the tendency to turn dividend income, which would be liable to income tax and surtax, into capital gains subject only to income tax.

The Minority agree with the Majority that gains arising out of the sale of owner-occupied houses (one per tax-payer) should be exempt from tax. The argument is rather out of line with the main body of the Report, since it specifically refers to the case of inflation. Moreover, while on the face of it the charging of tax when a man needs the whole of the proceeds of his old house to buy another one involves a hardship, exemption would create an inequity between house-owners and others who have been compelled by circumstances to live in rented accommodation and have been putting by savings to buy a house in the future, which savings have fallen in value because of the inflation. The inequity would remain even if the latter had put their savings, not in bonds, but in shares whose money value had risen; for when these shares were sold to buy a house the capital gain would be taxed. In so far as taxation of realised gains from sales of houses would reduce mobility, the fairer solution would be not to exempt such gains, but to assess owner-occupied houses on an *accruals* basis, which should not be particularly difficult. In this way the tax-payer would not find himself liable for a large lump of tax to pay when he is changing houses.

The Majority argued that capital gains are saved. " Certainly," they added, " it is the sensible thing that they should be " (106). This is not evidence. And it is the more surprising because elsewhere the Majority say: " In times of very heavy taxes on capital and income it is only natural that men should be more disposed to try to retain for themselves and their families their accustomed standard of living than an undiminished volume of capital " (535). If it is only natural to dissipate capital, it would seem even more natural, under these pressures, to spend out of capital gains.

The Majority examines the basis of the present taxation of company profits. As with so many British institutions, the only satisfactory " explanation " of what we do now is to be found in history. The arrangement which assesses gross profits of corporations to income tax before payment of dividend and then requires those who draw dividends virtually to " refund " the tax to the corporation dates back to 1803. Corporate taxation began as part of a tax system which contained only income tax and virtually no progression. Since then the development of various allowances and reduced rates of income tax and the imposition of a graduated surtax has reduced standard-rate to little more than a rather broad step in a long ladder of progression for the individual tax-payer. The Majority has little difficulty in showing that the profits tax, especially in its discrimination between distributed and undistributed profits, cannot be subsumed under any clearly understood

principles of "fiscal equity." If, on the one hand, profits of corporations are regarded as ultimately belonging to the shareholders they ought to be assessed to surtax in the way they are at present assessed to income tax (with the corresponding refund of tax from the shareholder when dividends are paid out). And if, on the other hand, a company has a personality of its own, is an entity distinct from the shareholders, there is no reason why a profits tax should not be regarded as different in kind from the taxation of individuals: variations in the one tax need not entail, on the grounds of "equity," variations in the other.

The Majority came near to this view, but not the whole way. "It seems to us a wrong principle to subject . . . the shareholder to income tax liability on his receipt from the company in any way that altogether ignores the fact that the profits from which the dividend is drawn have paid corporation tax in the company's hands" (544). They then seek a way of allowing credit to the individual tax-payer for corporation tax already paid on income he receives. They regretfully conclude that the attractions of the single-tier corporation tax are outweighed by administrative complications. The Minority reply, and they are surely right, that the argument of double taxation "assumes in effect that the Government would levy the corporation profits tax at the same rate (whatever that rate is) irrespective of whether the tax is credited against the shareholder's income tax or not" (MD 91). If profits are first subjected to corporation tax and then, when distributed as dividends, are subjected to income tax and surtax on the individual tax-payer, the *rate* of corporation tax would be less than would be needed to reap the same revenue if individual tax-payers were given a credit against corporation tax already paid. The rate of a quite separate corporation tax, that is to say, could be fixed to leave shareholders, as a body, with the same net disposable income as under the present system, although, of course, individual shareholders would do better or worse by the change according to assumptions made about the share of total profits distributed.

There remains the question of the discrimination between the tax on distributed and undistributed profits. Both the Majority and the Minority agree that at the time of its introduction in 1947, and in the years since, the short-run effects were good, but that long-run weaknesses are beginning to show themselves. The latter, they argue, are of two kinds. First there is the extreme complexity of administration which leaves firms more and more uncertain what their liability is if profits retained in the past are now distributed. Secondly, the effect of the discrimination has undoubtedly led to lower dividend distribution and higher company savings, so much so that companies as a whole have *saved* more in recent years than they have invested. It is difficult to see any advantages to be derived from *net* savings of corporations (in excess of their accumulation of real capital) in the long run. Apart from this the high retention of profits may lead to too much ploughing back in existing firms, while it would be better if funds were freed for diversion to new enterprises. The situation here is not, I think, as clear-cut as it is sometimes suggested. If companies were blinkered and would only re-

invest in industries in which they had already acquired experience the answer would be obvious. But there are many companies which are prepared to branch out into quite new lines, and it is not nearly so obvious that the directors of industrial companies are worse judges of which new products and processes to back than insurance companies, and other " institutional " savers or the " market " of private savers taking up new issues on the Stock Exchange. The class of companies which are likely to use the market is, to a considerable extent, the same as the class of companies which accrue undistributed profits. Moreover, the process of distributing dividends which are saved by individuals and institutions and then supplied back to enterprises *via* the Stock Exchange involves the costs of issuing, which are often extremely high. A flat corporation tax has clear administrative advantages, but I am not convinced by the other arguments of the Majority and Minority that discrimination ought to be abolished.

The Minority impose an essential condition. Discrimination should be dropped, in favour of a flat-rate profits tax, only if capital gains are subjected to tax. For the effect would undoubtedly be to raise the share of total profits distributed in dividends. This might lead to some increase in consumption demand, statistically small, but not necessarily negligible in its " demonstration " effect on wage claims. What really worries them is that the rise in dividends would be accompanied by a rise in share values—they estimate a capital gain of £12,000 million, which is of the order of one year's total consumer's expenditure at current prices. If only 10% of these gains were spent, the demand effects would be seriously inflationary in an economy already fully employed. Once again we come back to the crucial sentence in the Majority report: " It seems to us much better to assume that, on the whole, capital gains will be saved. Certainly it is the sensible thing that they should be." The Majority may have found it convenient to assume there would be no inflation, but they miss the point that their recommendations might make it more difficult than ever to control it.

Taken together, the Minority proposals make the structure of income- and profits-tax more equitable in a number of ways. Their economic effects would seem to be advantageous, with one important qualification. They reduce the opportunities of spending out of capital gains (by taxing them), but they equally reduce the opportunity of saving. While it is likely that some capital gains are spent, it is plausible that less is spent out of a given sum of money if it accrues as a capital gain than if it takes the form of income. Thus if total revenue is kept the same, less will be saved out of income and capital gains left at the disposal of individuals after tax. Any decline in private saving can, of course, be offset by increased Government saving achieved by higher tax rates and a budget surplus. In so far as the taxing of capital gains of *companies* reduces their saving substantially below their internal accumulation of real capital, that, too, could be offset by introducing discrimination in the corporation tax in favour of retention of profits. Thus it would seem that the Minority proposals could be carried out, if suitably modified, without adverse economic consequences.

But it is, perhaps, worth bringing out in conclusion the broader question of economic policy which lies behind direct taxation but on which, by their terms of reference, the Commission could only touch.

I take the central domestic problem of contemporary Britain to be the achievement of both a high rate of capital accumulation and greater equality. As for equality, income tax and surtax seem to be less and less effective at the margin, the two big loopholes being capital gains and "expenses." The Minority's proposals would sharply narrow these loopholes.[1] But they still only make possible equalisation of the *accruals* of spending power, whether from income or capital gains. They leave untouched the existing accumulation of wealth, especially inherited wealth in private hands. The Majority touched on the spending out of capital to maintain accustomed standards of living. "Accumulate, Accumulate! That is Moses and the prophets," wrote Marx. In the nineteenth century it was indeed regarded as wicked to spend out of capital. If it would be an exaggeration to say that the twentieth century law has become "Dissipate, Dissipate!" it is certainly the case that the spending of capital to maintain standards is no longer regarded as morally wrong. But to the extent that it occurs it frustrates the intentions of redistributive taxation. Provided that most property owners remain accumulators, and there are only a few dissipators, high taxation *cum* budget surpluses might secure a steady reduction in inequality. But there is a lurking danger that gradualism might overshoot the mark: "It is true on the other hand that a capital gains tax so severe in its incidence as to cause the property owner to wish to dissipate his capital would, for a short period, increase spending" (MD 61, footnote).

It is just this possibility that Mr. Kaldor's expenditure tax would seem to take in its stride. He would leave private wealth as it is, but tax all spending at a progressive rate so that dissipators would pay heavily for their pleasures, while accumulators would pay no tax at all. The neatness of this solution is indeed breath-taking; the problem of capital gains, for example, simply dissolves. But administrative problems are as formidable as the principle is simple, and resort may have to be made to a more untidy strategy.

G. D. N. Worswick

Magdalen College,
Oxford.

[1] On expenses the Majority would reduce the inequity between Schedule "D" and Schedule "E" incomes by relaxing under Schedule "E"; the Minority would tighten up under Schedule "D."

CURRENT TOPICS

THE Annual Meeting of the Royal Economic Society will be held at the London School of Economics at 5 p.m. on Wednesday, June 27. After formal business, there will be a discussion on the subject " How should we control monopoly? "

MAY we offer our good wishes to Sir Sydney Caine on his election to the office of Director of the London School of Economics and Politics in succession to Sir Alexander Carr-Saunders, who has held the office with such ability since 1937? Sir Sydney Caine, a former student of the College, after distinguished service in the Colonial Office and the Treasury, was made Vice-Chancellor of the University of Malaya in 1952; he has served simultaneously as Economic Adviser to the Singapore Chief Minister. His friends will be unanimous in welcoming him back to this country. We are delighted that Sir Alexander Carr-Saunders has accepted the nomination of the Council for the office of President of the Royal Economic Society for the coming year.

PROFESSOR FOSSATI writes:

> " Half a century ago the *Manuale di economia politica* of Vilfredo Pareto appeared in Milan. It was a small book, but it marked a very important epoch in economic inquiries. As is well known, the *Manuale* reached its culmination three years later, when its French edition, including a reformulation of the mathematical appendix, was published. It was, however, the Italian edition that established Pareto's new position in relation to pure economics. With the *Manuale* Pareto broke his strict ties with Walrasian formulation of the theory of general equilibrium and presented it as a system of states and obstacles. This new system provided not only a superb static construction, but also a powerful apparatus for dynamic analysis. While it is true that it is a system where every variant is referred to the same instant of time, and in that sense a static system, it is equally true that it shows itself to be a powerful instrument for dynamic analysis; for it offers a deep insight into the reactions of representative consumers and entrepreneurs to given situations, and thus, through a process of model construction, paves the way for economic analysis."

Admirers of Pareto may be interested to know that the Royal Economic Society has under consideration the preparation of an English translation of the *Manuale*.

THE following have been admitted to life fellowship of the Society:

Blankson, A. K.
Drayson, G. R.
Foldes, L. P.
Furth, C. A.
Hargreaves, R. E.
Kuen, T. Le C.
Tsuru, Professor S.

The following have been admitted to fellowship of the Society:

Ayorinde, L. A.
Bada, D. I.
Baddeley, F.
Baker, F.
Barnard, S. A.
Baxter, I. S.
Bellamy, R.
Bowley, Miss M. E. A.
Burchell, G. G. M.
Butler, F. W.
Byrne, F. O.
Camu, A.
Carpenter, T. J.
Chan, L. C. C.
Chapman, G. C.
Connor, D. G.
Constanticatos, M. E.
Coppieters, Dr. E.
Coughlan, M. J.
Craufurd, R. J.
Dalvi, M.
Dean, W. E.
Dholakia, Professor J. L.
Dinning, Miss A. M.
Dubey, V.
Duffy, J. R.
Eke, J. U. O.
Ezenkwele, A. A. C.
Franceskides, G. A.
Fruin, A. H.
Gaitan, R. T.
Garg, R. P.
Gourdie, R. W.
Grant, S. I.
Gupta, Professor G. P.
Gvirtzmann, M.
Hackman, E. B.
Haran, E. F.
Hawkins, E. K.
Henderson, F. T.
Hillman, S.
Hon, Lew Sip
Howard, R. J.
Iheme, J. E.
Ikpen, J.
Iwuagwu, E. O.
Jack, O. P.
Jackson, D. S.
Jain, U. K.
Jaiyesimi, S. O.
Jamaluddin, K. B.
Jha, N.
Jones, Miss S. M.
Jones, W. V.
Joshi, N.
Kansara, M. M.
Katzen, L.
Kim, Hr P. L.
Lakha, A. A. K.
Leach, K. P.
Lim, R. K-H.
Livingstone, D. A.
Lloyd, E. H.
Lomas, P. K.
Macinnes, F.
Maheshwari, M. L.
Maxwell, J.
Michaely, Dr. M.
Miller, A. P.
Mills, G.
Mitchell, E. M.
Morag, Dr. A.
Moss, L. A. W.
Nayar, V. P. D.
Nwofor, B. N.
Odey, D. C.
Ojugbele, A. O.
Oluborode, B. A.
Ong, Soon Ee
Oti, C. J. U.
Owook, E. P. W.
Ozga, S. A.
Parasher, R. N.
Patel, V. H.
Pek, B. K.
Phelps, E. S.
Portela, Professor G. P.
Prasai, C. K.
Profitt, J. W.
Ray, H. S.
Raymond, D. A.
Rimmer, D.
Robertson, W.
Rodrigues, J. L.
Schweitzer, P. R.
Shah, N. A.
Shah, R. N.
Shakespeare, P.
Simnett, E.
Simon, P. W.
Simpson, J. T.
Singh, Dr. V. B.
Smith, E. F.
Spiegelglas, S.
Stenhouse, W.
Sutton, D. F.
Szczepanik, E. F.
Tan, Teng Chao
Tebbutt, M. R.
Thakkar, B. M.
Thakkar, S. G.
Thorne, A. L.
Trend, H. G.
Unnithan, K. B.
Vaena, M.
Wai, J. K. C.
Woods, J. H.
Yaşa, Doç Dr. M.

The following have been admitted to Library membership of the Society:

Bibliotek Facultet Pertanian, Bogor, Indonesia.
California State Library, Sacramento.
Council of Economic Advisers, Washington.
Department of Extra-Mural Studies, University of Birmingham.
Economic Development Institute, Washington.
Free Library of Philadelphia.
Gallaudet College Library, Washington.
Joint Bank Fund Library, Washington.
Ministero del Tesoro, Rome.
School of Administration, University of Minnesota.
University of Oklahoma Library, Norman.

The Royal Economic Society would be glad to acquire a number of returned copies of the Economic Journal for September 1955. The Secretary will pay 3s. 6d. a copy for any copies that are sent to him in good condition at the Marshall Library, Downing Street, Cambridge. No other issue than that mentioned is for the moment required or can be purchased.

RECENT PERIODICALS AND NEW BOOKS

Applied Statistics

VOL. V, NO. 1, MARCH 1956. *The Use of Statistics in the Investment of Funds:* G. H. ROSS GOOBEY. *Modified Control Limits:* D. HILL. *A Regression Control Chart for Use in Personnel Selection:* F. SANDON. *Factor Analysis as a Technique for Examining Complex Data on Foodstuffs:* R. HARPER. *Field Work in Sample Surveys of Household Income and Expenditure:* D. E. COLE.

Economica

VOL. XXIII, NO. 89, FEBRUARY 1956. *Industrial Growth and Industrial Revolutions:* D. C. COLEMAN. *Marshall's Demand Curve:* R. F. G. ALFORD. *Robert Torrens—1780–1864:* S. A. MEENAI. *Earned and Investment Incomes, U.K. 1952–53:* E. C. RHODES. *The Purchasing Power of British Exports: A Rejoinder:* R. MARRIS. *Trade and State Action in an "Underdeveloped" Economy:* SIR S. CAINE.

The Review of Economic Studies

VOL. XXIII, NO. 61, 1955–56. *Alternative Theories of Distribution:* N. KALDOR. *The Production Function and the Theory of Capital:* R. M. SOLOW. *Technology and the Price Structure in General Equilibrium Systems:* V. ZARNOWITZ. *Some Monetary Aspects of Multiplier Theory and Fiscal Policy:* L. S. RITTER. *A Note on Definitions of Related Goods:* M. MORISHIMA. *Pearce, Monopoly and Socialism:* K. LANCASTER. *Pearce's General Equilibrium Model:* S. A. OZGA. *A Reply:* I. F. PEARCE. *Oligopoly and its Problems:* J. N. WOLFE.

Oxford Economic Papers

VOL. 8, NO. 1, FEBRUARY 1956. *The Raw Cotton Commission, 1948–52:* J. WISEMAN and B. S. YAMEY. *Benelux and Problems of Economic Integration:* W. ROBERTSON. *The Holding of Assets: "Gambler Preference" or "Safety First"?:* R. A. D. EGERTON. *Growth of Employment and Diversification of Industry in the Development Areas:* P. ROBSON. *A Note on Index-numbers and Compensation Criteria:* M. H. DOBB. *Straightforwardness in Voting Procedures:* R. FARQUHARSON. *Marshall and the Trade Cycle:* J. N. WOLFE.

The Journal of Industrial Economics

VOL. IV, NO. 2, FEBRUARY 1956. *The Report of the Attorney General's National Committee to Study the Antitrust Laws:* W. S. BOWMAN. *A Survey of Management Education in the United Kingdom:* D. K. CLARKE. *Uncertainty, Prices and Entrepreneurial Expectations—An Applied Study:* M. WRAY. *A Survey of the Annual Costs of Contractors' Mechanical Plant:* P. A. STONE. *The Supply of Capital to New Businesses:* F. R. JERVIS.

The Manchester School of Economic and Social Studies

VOL. XXIV, NO. 1, JANUARY 1956. *The Climacteric of the 1890's: A Critical Note:* D. J. COPPOCK. *Some Aspects of Building Society Finance:* G. W. MURPHY. *A Women's Clothing Multiple:* M. J. WRAY. *A Note on Managerial Incomes in Retail Distribution:* S. POLLARD. *The Development Areas: A Further Note:* J. H. DUNNING.

Scottish Journal of Political Economy

VOL. III, NO. 1, FEBRUARY 1956. *Marshall on Economic Growth:* A. J. YOUNGSON. *Electricity in the North of Scotland:* D. L. MUNBY. *The Construction Costs and the Value of the British Merchant Fleet, 1850–1938:* K. MAYWALD. *The Retail Distributive Trades in Scotland:* W. R. MATHESON.

The British Journal of Sociology

VOL. VII, NO. 1, MARCH 1956. *Sociology and the Study of Values:* A. M. ROSE. *Social Science:* P. WINCH. *Family Allowances:* N. D. VANDYK. *Employment of Sociology and Anthropology Graduates, 1952 and 1954:* J. A. and O. L. BANKS. *Some Reflections on the Sociology of Knowledge:* T. B. BOTTOMORE. *Anthropology Today:* T. H. MARSHALL.

Population Studies

VOL. IX, NO. 3, MARCH 1956. *Population Trends and Population Policy in Ceylon:* N. K. SARKAR. *A Study of Demographic Trends in West Bengal during 1901–1950:* A. GHOSH. *The Demography of Chile:* O. CABELLO. *A Critique of the Glass-Grebenik Model for Indirectly Estimating Desired Family Size:* R. G. POTTER. *Some Remarks on Coverage Checks in Population Censuses:* S. S. ŽARKOVIĆ.

Political Studies

VOL. IV, NO. 1, FEBRUARY 1956. *Devolution Reconsidered:* R. J. LAWRENCE. *Politicians, Public Servants, and the People in New Zealand: II:* P. CAMPBELL. *American Parties: A Wisconsin Case-study:* L. D. EPSTEIN. *Planning: A Case-study:* H. ECKSTEIN. *The Federation of British Industries:* S. E. FINER.

International Affairs

VOL. 32, NO. 2, APRIL 1956. *Crown and Commonwealth in Asia:* SIR I. JENNINGS. *The H-bomb: Massive Retaliation or Graduated Deterrence?:* SIR A. BUZZARD; SIR J. SLESSOR; R. LOWENTHAL. *The Revolution in Argentina:* G. PENDLE. *India and the Russian Visitors:* G. TYSON. *German Foreign Office Documents on Financial Support to the Bolsheviks in 1917:* G. KATKOV. *Resources on International Affairs in London Libraries:* B. KYLE.

Journal of Agricultural Economics

VOL. XI, NO. 4, JANUARY 1956. *A Review of Fifty Years Farm Management Research:* J. R. CURRIE. *The "Example" Farm in Management Investigation:* A. S. BARKER. *The Dissemination of Technical and Economic Information in Farm Advisory Work:* M. L. M. REEVES. *Labour in Scottish Agriculture:* G. F. HENDRY. *Agriculture in an Expanding Economy:* R. C. TRESS. *Agrarian Reform in Sweden:* F. MEISSNER. *Linear Programming and the Cost of Pig Fattening Rations:* H. C. MACKENZIE and T. E. GODSELL. *Accounting for Farm Planning:* V. LIVERSAGE. *Teaching Agricultural Economics at University Level:* W. H. LONG.

The Farm Economist

VOL. VIII, NO. 3, 1955. *Credit for Agricultural Land Purchase in England and Wales:* S. G. STURMEY. *Economy in Pig Feeding:* A. H. MAUNDER. *Farm and Non-farm Capital, 1867–1938:* J. R. BELLERBY.

VOL. VIII, NO. 4, 1955. *The Productivity of Major Factors in British Farming:* J. O. JONES. *Regional Agricultural Rents and Types of Farming Land:* E. B. BUTLER. *The Rate of Yield on Investment in Tenanted Farms, England and Wales, 1937-9 to 1955:* J. T. WARD.

The Agricultural History Review

VOL. IV, PART I, 1956. *An Agrarian History of England:* H. P. R. FINBERG. *The Statistical Assessment of British Agriculture:* J. T. COPPOCK. *A Review of Balks as Strip Boundaries in the Open Fields:* H. A. BEECHAM. *An Answer to Poverty in Sussex, 1830–45:* A. C. TODD.

Accounting Research

VOL. 7, NO. 1, JANUARY 1956. *The Measurement of Profits—A Study in Methods: III: The Profits Index:* R. K. NIGAM. *The Audit of Government Accounts in Britain:* J. P. KELLY. *Accounting Dynamics: IV:* F. SEWELL BRAY. *The Accounts of a French Émigré Officer:* R. R. COOMBER. *The Antecedents of American Public Accounting:* J. D. EDWARDS.

Journal of the Institute of Actuaries

VOL. 81, PART III, NO. 359, 1955. *Ordinary Life Office Organization Using a Large-scale Electronic Computer:* A. C. BAKER. *Deferred Annuities with Participation in Profits:* M. E. OGBORN and G. E. WALLAS.

The Banker

VOL. 106, NO. 361, FEBRUARY 1956. *The Bankers and the Squeeze. The Soviet Economic Offensive. As I See It:* SIR O. HOBSON. *Is Britain Against Monopoly?:* J. E. HARTSHORN. *How Dearer Money has Cut Credit. Latin American Currency Practices:* J. C. HUNT.

VOL. 106, NO. 362, MARCH 1956. *No Epitaph to Freedom. What Future for Gold? How State Industries Should Work. As I See It:* SIR O. HOBSON. *Will Brazil Unravel its Exchanges? Belgium's Uneasy Prosperity:* A. LEEMAN. *Irish Banks Feel the Pinch. Is Life Assurance Keeping Pace?*

VOL. 106, NO. 363, APRIL 1956. *Should Liquidity Ratios be Prescribed? Dearer Money and the Sterling Area. As I See It:* SIR O. HOBSON. *The Coming Test of the D-Mark:* C. W. LAYTON. *Alternatives to Surtax:* U. K. HICKS. *Raising Wages without Inflation: I: Dangers of Productivity Link:* C. HENNIKER-HEATON; *II: The Economic Argument Restated. How Vulnerable is Welsh Industry?:* E. V. MORGAN.

VOL. 106, NO. 364, MAY 1956. *A Funding Budget. Too Much Investment?:* J. E. HARTSHORN. *As I See It:* SIR O. HOBSON. *New Facilities for Export Finance? Malaya Faces Independence:* F. KING. *Britain's Strain on Sterling. Building Societies in the Credit Squeeze:* M. NAYLOR. *Scotland: A Financial and Industrial Survey.*

The Bankers' Magazine

VOL. CLXXXI, NO. 1343, FEBRUARY 1956. *Bank Chairmen and the Credit Squeeze:* S. H. FROWEIN. *Banking Profits in 1955. As Others See Us:* J. E. WADSWORTH. *The Future of Monetary Policy in Australia:* D. C. ROWAN.

VOL. CLXXXI, NO. 1344, MARCH 1956. *Employment and Bank Rate:* SIR R. HAWTREY. *The Practicability of an Expenditure Tax in the Light of the Oxford Savings Survey:* L. R. KLEIN. *The Irish Economy in 1955:* G. A. DUNCAN. *The Credit Squeeze and the Sterling Exchange:* H. E. EVITT.

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Izvestia na Vishiya Finansovo-Stopanski Institut (Bulgarian text, German and Russian summaries)

VOL. VII, NO. 1. *The Struggle for Larger Harvests and Progress in Agriculture:* P. MASTIKOV. *Regulation of the Wheat Market in the U.S.A.:* CH. BEYAZOV. *Some Accounting Problems of Circulation Expenses in Wholesale and Retail Trade:* D. SPASOV. *Planning the Woodworking Industry in Comparable Prices:* I. DOCHEV. *The 200th Anniversary of Moscow University:* P. SPIRKOV. *The Bulgarian Budget for 1955:* R. ANGELOV.

VOL. VII, NO. 2. *The Analysis of Manpower Potential and Utilisation in Agricultural Co-operatives:* S. STANEV and T. TOTEV. *Problems of Cutting Production Costs in the Georgi Dimitrov Factory, Troyan:* G. TOSHEV and V. NANKOV. *Accelerating the Turnover Cycle of Working Capital in Commercial Enterprises:* V. PAVLOV. *Some Questions Concerning Money Circulation and its Planning:* L. RALCHEV. *People's Poland on the Road to Socialism:* S. LALEV. *First Half-year Fulfilment of the 1955 Economic Plan:* K. ZANEV.

VOL. VII, NO. 3. *The New Planning System for Agriculture and Specialisation:* P. MASTIKOV. *The Location of Industry with Special Reference to Northern Bulgaria:* KH. MARINOV. *Scope for Raising Productivity and Lowering Costs in Cotton Mills:* V. RANKOV, D. SPASOV and P. TELBINOV. *Accounting Practice for Livestock Farming in Co-operatives:* S. OBRETENOV. *For a Full Use of Intra-factory Reserves:* K. GATEV. *Extracts from the Report of the Italian Vice Consul at Rushchuk, 1881.*

Economist (Croat text)

NO. 1, 1956. *National Income Calculation:* J. POKORN. *A Method of Real National Income Calculation:* S. STAJIĆ. *Long-term Forecasting of Yugoslav Foreign Trade:* V. PERTOT. *Agricultural Production and Food:* E. BERKOVIĆ. *The Incidence of Taxation upon Prices:* R. RADOVANOVIĆ. *Energy Consumption as an Indicator of Economic Development:* M. NIKOLIĆ. *The Teaching of Economics at Universities:* G. GROĐIĆ. *Simple and Multiple Labour in the Marxist Theory of Value:* A. BAJT. *Enterprise Problems in Our Economy:* S. OBRADOVIĆ. *Technical Progress in Agriculture at the International Conference of Agricultural Economists:* S. KRAOSVEC. *Some Observations on the XX Session of the U.N. Economic and Social Council:* R. STAMENKOVIĆ.

Közgazdasági Szemle (Hungarian text, English and Russian summaries)

NO. 1, 1956. *For the Fulfilment of the 1956 Foreign Trade Plan. Problems of Long-term Planning in the Engineering Industry:* O. GÁBOR. *The Tasks of Financial Control in 1956 Plan Fulfilment:* G. TAUSZK. *The Socialist Organisation of Work—an Important Instrument of Agricultural Co-operatives:* J. PÁL. *Problems of Timber Supply in Hungary:* I. TÖMPE. *The War Preparations of Industry and their Impact on the Development of the Industrial Cycle in Hungary between 1933 and 1938:* I. BEREND and G. RÁNKI.

NO. 2, 1956. *The Economists' Tasks in Consolidating Agricultural Co-operatives. The New Raw Material Basis for Hungary's Light Industry:* E. JAKAB. *The Rôle of the Net Proceeds of the Enterprise in Socialist Trade:* I. FENYÖ, and A. LUKÁCS. *Unutilised Stocks Represent Important Reserves:* S. GERGELY and V. WESSELY. *The Economic Importance of the Increased Use of Diesel Engines in Railway Traction:* S. HARMATI.

NO. 3, 1956. *The XX Congress of the Communist Party of the Soviet Union. Technical Development in the Sixth Five-year Plan of the Soviet Union:* G. SZABÓ. *European Integration and Imperialist Antagonisms:* G. GÖNCÖL. *Co-operatuive Farms and their Farming Plans for the Current Year:* I. PÁLINKÁS. *Some Problems of Building Development:* L. LUX. *The Economic Policy of Hungarian Governments 1848–9:* G. MÉREI. *Observations on U.S. Agriculture:* J. KESERÜ.

Sztatisztikai Szemle (Hungarian text)

DECEMBER 1955. *On the Economic Utilisation of Materials. Notes on the Population Census:* L. THIRRING. *Statistics in Western European Countries:* A. MOD. *The Analysis of the Economic Efficiency of the Introduction of New Technology:* A. KONSON.

JANUARY 1955 (henceforward with English and Russian summaries). *The Closing Accounts of Agricultural Co-operatives in 1955:* I. HADJU. *The Production and Use of Fertilizers in Hungary:* L. HALKOVICS. *Some Problems of Energy Economy:* L. OROSZ. *Differences in Mortality Rates in Capitalist Countries:* J. RÉDAI.

FEBRUARY 1956. *Some Questions Concerning Incomplete Investments:* F. DEÁK and D. SÓKY. *The Place of the Production Cost Indicator in Judging the Rentability of an Enterprise:* L. TÜÜ. *Foreign Trade in the Balance of National Income:* S. FERGE. *The Third Plenary Session of the Yugoslav Statistical Soiety:* J. ZALA. *Development of the Hungarian Textile Industry:* S. FÜLÖP.

Probleme Economice (*Rumanian text*)

No. 10, 1955. *Ten Years Since the National Conference of the Rumanian Communist Party. Economic Policy in the Transition from Capitalism to Socialism:* I. ANGHEL. *The Introduction of New Technology: The Basis for Raising Productivity in Coal-mining:* N. SCHWARTZ. *Aspects of Profitability in the Food Industry:* GH. POSTOLEA. *The Rational Use of Agricultural Land:* S. HARTIA and O. GHEORGHIU. *The German Democratic Republic on the Road of Economic Progress:* G. VIRGILIU. *On Anglo-American Economic Contradictions:* GH. NISIPEANU. *Ion Ionescu de la Brad—a Progressive Economist:* B. ZAHARESCU.

No. 11, 1955. *The Socialist Economic System—the Basis of the Elimination of Economic Inequalities Between the Peoples of the U.S.S.R.:* E. PRAHOVEARU. *Reflections on Market Problems and Price Policy in Rumania:* A. NEGREA. *Automation in Industry and Transport:* M. POPA. *The Economic Law of the Uninterrupted Growth of Productivity Under Socialism:* C. PINTILIE and V. WEISS. *Financial Autonomy in Socialist Trade:* GH. FETEANU. *Successes of the European Popular Democracies in Socialist Industrialisation:* A. TOTH. *The Vulgar Theories on Economic Crises of Certain Bourgeois Economists:* L. STROJA (discusses Boulding, Bratt, Gordon, Haberler, Hansen, Lerner, Mitchell, Reynolds, Sternberg and Wright). *The Rôle of the Finance and Credit System in the Distribution of the National Income:* I. VĂCĂREL.

No. 12, 1955 (henceforward with French and Russian summaries). *The Rumanian Workers' Party—Initiator and Organiser of the Socialist Construction of the Rumanian People's Economy:* V. RAUSSER. *Considerations on the Correct Correlation Between the Rates of Growth of Producer and Consumer Goods:* E. BALAŞ. *The Importance of a Right Ratio between Increments in Labour Productivity and Average Wages:* I. BATI and P. COPPELOVICI. *The Role of Heavy Industry in the Socialist Transformation of Agriculture:* F. BURTAN. *The Influence of Socialist Trade upon Industrial Production Since the Abolition of Rationing:* J. PODOLEANU. *Some Aspects of the Absolute Impoverishment of the Working Class under Contemporary Capitalism:* G. MARIONOVICI. *Price Policy To-day:* R. MOLDOVAN.

No. 1, 1956. *On Production and Consumption Under Capitalism and Socialism:* E. DAN. *The Gradual Elimination of the Contradictions between Town and Country in the Transitional Period from Capitalism in Rumania:* I. ADAM. *Certain Theses of Bourgeois Economists on the Agrarian Problem in Bourgeois–Landlord Rumania:* C. MURGESCO. *National Income in Bourgeois–Landlord Rumania:* D. GRINDEA.

NEW BOOKS

British

ABEL-SMITH (B.) and TITMUSS (R. M.). The Cost of the National Health Service in England and Wales. National Institute of Economic and Social Research, Occasional Paper No. XVII. London: Cambridge University Press, 1956. 10″. Pp. xv + 176. 27*s.* 6*d.*

[Reviewed in this issue.]

CHARLESWORTH (H. K.). The Economics of Repressed Inflation. London: Allen & Unwin, 1956. 8½″. Pp. 126. 13*s.* 6*d.*

[To be reviewed.]

COLERUS (E.). From Simple Numbers to the Calculus. Mathematics for everyman. Translated from the German by B. C. and H. F. BROOKES. London: Heinemann, 1955. 7½″. Pp. ix + 255. 12*s.* 6*d.*

[This is an extremely accomplished, excellently presented and well-translated introduction to mathematics. No attempt is made to evade the difficulties inherent in the subject, and they are clearly and carefully explained. The author's admirable object is to increase understanding rather than to leave the reader grasping formidable tools, the use of which he does not fully appreciate. He follows in the worthy tradition of Courant and Robbins, the authors of *What is Mathematics?*, though necessarily at a lower level of abstraction and with a much smaller compass. The book can be most warmly recommended as a first course for economists with no basic mathematical training as a prelude to more specialist mathematical reading.]

CROSSMAN (R. H. S.). Socialism and the New Despotism. Fabian Tract No. 298. London: The Fabian Society, 1956. 8¼". Pp. 24. 1*s.* 6*d.*

[Mr. Crossman here argues that the Labour Party will be both unfaithful to its traditional principles and unlikely to recapture public allegiance if it neglects to challenge the present tendency to concentration of power and diminution of personal freedom and responsibility. This tendency exists not merely in private business but also in trade unions, in the nationalised industries, in political parties and in the organs of the state. The need for a socialist party to challenge this "new despotism" is all the greater, since the relatively satisfactory economic performance of capitalism in recent times has forced socialists to revert to "Tawney's case for Socialism . . . not that it is easier to work than the acquisitive society but that it is morally superior—and politically essential to the realisation of freedom."]

DEPARTMENT OF AGRICULTURAL ECONOMICS, UNIVERSITY OF BRISTOL. Cattle Fattening on Grass: a study in South West England, 1954; Report No. 87; pp. 13; 1*s.* 6*d.* A Comparison of Pig Production before and after the War, with special reference to South West England, by E. BURNSIDE and W. M. STRONG; Report No. 88; pp. 27; 2*s.* 6*d.* An Investigation into Some Financial and Physical Aspects of Lowland Sheep Farming in Mid-Devon, 1952–53 and 1953–54, by E. T. DAVIES; Report No. 90; pp. 23; 2*s.* 6*d.* Newton Abbot: Department of Economics, University of Bristol, 1956. 10½".

[These are three reports based on sample investigations of farms in the South-west. An interesting finding of the report on pig production is that in the farms studied efficiency appears to have been no higher in 1954 than it was in 1938. It is suggested that the absence of improvement may have been due partly to the drastic restriction of pig production during the War, and that better results may be attained in the future if producers enjoy more stability.]

FERNS (H. S.) and OSTRY (B.). The Age of Mackenzie King. The rise of the leader. London: Heinemann, 1956. 9". Pp. 356. 25*s.*

[In a period of unprecedented political and economic disturbance, an apparently unlovable Canadian managed to break the British record for Prime Ministerial longevity. The enigma of Mackenzie King's success contains the secrets of Canada's national identity; yet it has become, if anything, more puzzling since his death. This book contributes to its solution an examination of the relatively unexplored forty-five years of King's life prior to his election to leadership of the Liberal party. The central theme is that King was successful because he understood the social and economic forces underlying Canadian politics. This fundamentally Marxist theme is developed with an equally Marxist vindictiveness towards the subject of the study, reminiscent of left-wing Canadian politics in the 1930s. Both the evidence and its unsympathetic interpretation frequently support an alternative hypothesis: that King, like many other products of the Canadian small town, was peculiarly fitted for the career of incessant compromise without loss of self-esteem required of leaders in modern American society; and that while he was often singularly inept, he was saved from disaster by luck, the shortcomings of his opponents and his own talents for weasel-wording. In the course of their painstaking and well-documented examination of the highlights of King's early career, the authors destroy one after another of the myths which served King well in later years; it is perhaps a final manifestation of his luck that the publication of what might once have been political dynamite has been delayed until King has become part of the Canadian national heritage.]

From Profit Sharing to Common Ownership. A practical example of growth from the old to the new. Wellingborough: The Scott Bader Commonwealth, 1956. 8". Pp. 38.

[This describes the constitution of the Scott Bader organisation, which produces synthetic resins and has some 170 employees. This constitution is rather unusual, and it does not conform to any of the best known types of co-ownership or profit sharing. The ownership of the firm has been made over almost entirely to its employees, but responsibility for management effectively remains with the founders. The ideals animating the founders are those of the Society of Friends. They involve a much more thorough-going rejection of normal notions of the proper relation between work and remuneration than has usually been involved in schemes of profit sharing.]

HELLER (F. A.) (Ed.). New Developments in Industrial Leadership in Great Britain, the United States, Germany and France. Polytechnic Management Association, New Development Series, No. 1. London: Department of Management Studies, The Polytechnic, Regent Street, 1955. 8¼". Pp. 75. 5*s.*

[This contains four lectures. In the first, Dr. J. A. C. Brown discusses in general terms the revolution in thought about industrial psychology brought about by the work of Elton Mayo and his associates and assesses the regrettably limited extent to which these ideas are understood and applied by management in Great Britain. The second lecture, by Jerome F. Scott, further considers American ideas and practice about human relations in industry, with special reference to the problem of how to make changes in productive methods acceptable to workers. The scope of the other two lectures is rather different. Frank A. Heller describes the system of joint management

that has been instituted in Germany since the War. He explains how in the coal, iron and steel industries legislation has secured really effective participation in management by workers' representatives, as distinct from mere consultation. In the rest of industry, worker representation is a good deal less effective, but it is still important. Mr. Heller considers why it is that the objections that have been raised in this country when such arrangements have been proposed do not appear so far to have been applied to the German experience. In the final lecture H. Hanck describes the extent of workers' participation in management in nationalised industry and in private industry in France.]

LACHMANN (L. M.). Capital and its Structure. London: Bell, for The London School of Economics and Political Science, 1956. 8½". Pp. 130. 15*s*.

[To be reviewed.]

Local Government and Central Control. A West Midland Group Study. London: Routledge & Kegan Paul, 1956. 8½". Pp. 296. 28*s*.

[To be reviewed.]

NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH. Register of Research in the Social Sciences in Progress and in Plan and Directory of Research Institutions. No. 12, 1955. London: Cambridge University Press, 1956. 10". Pp. 168. 25*s*.

[The present issue of this valuable register follows the lines of its predecessors. The physical appearance of the volume is much improved compared with previous years.]

NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH. Thirteenth Annual Report, 1955. London: National Institute of Economic and Social Research, 1956. 10". Pp. 39.

[This contains the usual lucid survey of the Institute's current research activities. The account given of the various projects in hand is mainly confined to their scope and purpose. In a few cases an interim outline of findings is also indicated, but the report does not set out to do this systematically for all research projects, in the way that is done, for example, in the annual reports of the National Bureau of Economic Research.]

Oxford Regional Economic Atlas of the U.S.S.R. and Eastern Europe. Prepared by the Economist Intelligence Unit and the Cartographic Department of the Clarendon Press. London: Oxford University Press, 1956. 10½". Pp. 134. 42*s*.

[This is the first of a series of regional economic atlases which is planned to cover the world in eight volumes. In lay-out and design it resembles the *Oxford Economic Atlas of the World*, published in 1954 (see ECONOMIC JOURNAL, December 1954, p. 877). The amount of detailed information which it contains will make it an indispensable work of reference for students of the region. In addition to the general maps and those showing geology, relief, soils, vegetation, climate and transport there are numerous detailed and easily usable maps showing the amount and distribution of production of the chief commodities. Supplementary information and comparisons with other countries are provided in the accompanying text, which, together with the gazetteer, occupies rather less than half of the total space.]

PRESSNELL (L. S.). Country Banking in the Industrial Revolution. London: Oxford University Press, 1956. 8½". Pp. 591. 70*s*.

[To be reviewed.]

Readings in Fiscal Policy. Selected by a Committee of the American Economic Association. London: Allen & Unwin, 1956. 9". Pp. 596. 30*s*.

[To be reviewed.]

RICHARDSON (P. P.). The Profitability of Fattening Cattle 1953–54. Loughborough: University of Nottingham School of Agriculture (Department of Agricultural Economics, Sutton Bonington, Loughborough), 1955. 10". Pp. 28. 2*s*.

[The chief purpose of this report is to compare the profitability of two groups of herds, in which the cattle were wintered in yards and outwintered respectively. The latter group were found to be much more profitable. Within each group the cattle which yielded the highest profit received less nutrients than average.]

ROBERTS (B. C.). Trade Union Government and Administration in Great Britain. London: Bell, for The London School of Economics and Political Science, 1956. 8½". Pp. vii + 570. 31*s*. 6*d*.

[To be reviewed.]

TITMUSS (R. M.). The Social Division of Welfare. University of Birmingham, Eleanor Rathbone Memorial Lecture. Liverpool: Liverpool University Press, 1956. 8½″. Pp. 23. 2*s*. 6*d*.

[Professor Titmuss here joins issue with those economists who maintain that the social services will or ought to wither away in time as the growth in the national income leaves fewer and fewer people in a state of poverty. He points out that the implications of such a doctrine are a great deal more far-reaching than is commonly understood. For it is quite arbitrary to confine discussion of social security to separately administered schemes such as family allowances and national insurance, when precisely similar provision for dependency of various types is made in the income-tax system. Nor is it fair to neglect the welfare benefits, in cash or in kind, which employers provide to their employees. The state has an interest in these, both because they enjoy tax privileges and because the state is itself such a large employer. The neglect of fiscal and occupational welfare benefits gives a quite misleading picture of the present operation of the welfare state. For example, the plea for giving larger family allowances to people with higher incomes, on the grounds that the cost of a child varies with income, looks a good deal less convincing when it is pointed out that already under the existing system the annual net bounty, including tax relief, enjoyed by a married man with two children (as compared with a married man with no children) is nearly four times as great if his income is £2,000 a year as it is if his income is £400 a year. Much inconsistency and inequity has resulted from failure to appreciate the close similarity between fiscal and occupational benefits and social-security benefits in the narrower sense. Professor Titmuss suggests that so far from economic progress causing the need for the social services to wither away, the tendency is rather for "states of dependency," which have inevitably to be defined in terms that are largely social and conventional, to become more widespread on account of increased specialisation. This point, along with one or two others in this stimulating lecture, remains a little unclear in Professor Titmuss' exposition, and we shall look forward to the more extended treatment of the subject which he promises.]

WALLACE (C.) (Ed.). The Investor's Pocket Book. London: Evans, 1955. 6½″. Pp. 160. 5*s*.

[This is one of a series of "Pocket Books" of practical information published by Evans Brothers. It contains an elementary introduction to problems of investment, addressed chiefly to the small capitalist who is interested in a decent return and security for his money capital rather than in appreciation. The workings of the stock exchange are lucidly expounded, and there is a good glossary of technical terms.]

WRIGHT (R.). The Colour Curtain. A report on the Bandung Conference. London: Dennis Dobson, 1956. 8″. Pp. 187. 12*s*. 6*d*.

[This is a slight but readable book in which the well-known American negro novelist describes the Asian-African Conference held at Bandung in Indonesia in April 1955 and gives expression to some reflections on racial problems stimulated by it. Much of the book is taken up with records of conversations between the author and the people whom he met on that occasion.]

Indian

Taxation of Bonus Shares. Bombay: Association of Indian Trade and Industry (21 Hamam Street, Fort, Bombay), 1955. 9½″. Pp. 22.

[It is argued that the issue of bonus shares is normally no more than a book transaction, desirable in order to represent properly the company's capital position but not conferring a tangible benefit on shareholders. Bonus shares are not therefore a suitable subject of taxation. It is admitted that in certain circumstances the capitalisation of reserves by the issue of bonus shares prior to the liquidation of a company may be a means of tax avoidance, but it is suggested that this loophole could be closed without resorting to any general taxation of bonus issues.]

American

ABBOTT (L.). Quality and Competition. An essay in economic theory. New York: Columbia University Press, 1955 (London: Geoffrey Cumberlege, 1956). 9″. Pp. 229. 30*s*.

[To be reviewed.]

BARGER (H.). Distribution's Place in the American Economy since 1869. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research, 1955 (London: Geoffrey Cumberlege, 1956). 9″. Pp. 222. 36*s*.

[To be reviewed.]

BLUMENTHAL (W. M.). Disability Retirement in Industrial Pension Plans. Princeton, New Jersey: Industrial Relations Section, Princeton University, 1956. 9½". Pp. 62. $2.00.

[This is concerned with the problem of providing under industrial pension schemes for workers who are obliged to give up work before the normal retirement age on account of disability. The proportion of workers who have to do this is not normally very large, but those who do are often not at all well provided for. The survey is based on an inquiry into the practices adopted in a sample of 127 leading American companies. Various suggestions are made by which the treatment of the disabled worker might be made more generous without undue cost to the employer.]

BOK (D. C.). The First Three Years of the Schuman Plan. Princeton Studies in International Finance, No. 5. Princeton, New Jersey: International Finance Section, Princeton University, 1955. 9". Pp. 79. 25*c*.

[After describing the aims and institutions of the European Coal and Steel Community, the author recounts the steps that have been taken to create a common market and the extent to which effective competition has been established. He then considers the consequences that would be likely to follow if competition should in the future become more severe. The goal of competition is, in his view, still largely unattained; equalisation of cost has not been achieved, and prices are probably above what would be a truly competitive level. However, the result no doubt compares favourably with what it would have been under an international cartel, and investment and modernisation have probably been encouraged by the existence of some degree of competition and by the expectation that competition might increase.]

BONER (H. A.). Hungry Generations. The nineteenth-century case against Malthusianism. New York: King's Crown Press, Columbia University (London: Geoffrey Cumberlege), 1955. 8". Pp. 234. 30*s*.

[This is " a history of the rise and fall of the Malthusian theory in nineteenth century England," taking the phrase Malthusian theory in a broad sense to include not merely Malthus' analysis of population but also the fatalistic social and political doctrines that were derived from it. The author makes no attempt to conceal which side he is on: he shares to the full the indignation expressed by Coleridge, Hazlitt and the rest at the inhumanity and injustice which the Malthusian theory was used to justify. His very readable book is primarily an account of the literature of protest against this theory. It is intended less as a study of the population problem itself—in the discussion of which the author is not always entirely sure-footed—than as a contribution to the history of thought and the history of letters. One of the chief findings is that while hardly any of the political economists expressed serious doubts about the Malthusian position until a generation or so after the appearance of the *Essay on Population*, the poets and the men of letters were aroused to protest at once: " few of the great names of the time were absent from the list of participants in the Malthusian battle; and of these participants, all but a small band . . . stood in the anti-Malthusian ranks."]

CASSELMAN (P. H.). The Economics of Employment and Unemployment. Washington, D.C.: Public Affairs Press, 1955. 9½". Pp. 183. $3.25.

[A survey of the principal causes of unemployment in industrial countries and of the ways in which the problem of unemployment may be tackled. The book is clearly written, and certain passages in it are of interest, but the analysis does not in general contain sufficient novelty or subtlety of treatment to enliven its very well-worn theme.]

The Challenge of Automation. Papers delivered at the National Conference on Automation. Washington, D.C.: Public Affairs Press, 1955. 9½". Pp. 77. $2.50.

[A collection of addresses delivered at a conference convened under the auspices of the Congress of Industrial Organisations. Most of the speakers are either in academic life or representatives of organised labour.]

COOKENBOO (L.). Crude Oil Pipe Lines and Competition in the Oil Industry. Cambridge, Mass.: Harvard University Press, 1955 (London: Geoffrey Cumberlege, 1956). 8½". Pp. 177. 32*s*.

[The problem which provides the subject of this monograph is how to reconcile the great economies of scale that exist in the operation of crude-oil pipe-lines with the desirability of enabling independent refiners to compete on fair terms with the vertically integrated companies. This problem has been the subject of much controversy in the United States. Professor Cookenboo precedes his discussion of it by a statistical analysis of the structure of the industry and of the costs of operating pipe-lines. He believes that there has been a tendency to exaggerate the handicap imposed upon independent refiners by the present system of crude-oil pipe-line ownership by the integrated major companies, since most of the existing independent refining capacity is situated sufficiently close to supplies of crude oil for transportation not to be a problem. He admits,

however, that the present system may discourage new entry to the refining section of the industry. The author sees serious objections to attempting to deal with the situation by compulsory divorcement of pipe-line ownership from refinery ownership or by government regulation of the rates charged for the use of pipe-lines. The scheme which he himself most favours is one of joint ownership of pipe-lines by all companies willing to pay for a share of the cost, with some government regulation, chiefly to ensure that no company wishing to join in the scheme is excluded from it. He believes, however, that in most cases where new pipe-lines have to be built the pursuit of private interest will probably tend in any case to bring about some such system of combined transportation.]

CRAIG (H. F.). Administering a Conversion to Electronic Accounting. A case study of a large office. Cambridge, Mass.: Harvard University Graduate School of Business Administration, 1955 (London: Bailey Bros. & Swinfen, 1956). 8″. Pp. 224. 20*s*.

[This is a case study of business administration in the familiar tradition of the Harvard Business School. It is concerned chiefly with the staff problems that arose in connection with the change-over to electronic accounting methods in a large insurance office. In this case the change-over was made very successfully, and the author analyses the ways in which this result was achieved.]

FELLNER (W.). Trends and Cycles in Economic Activity. An introduction to problems of economic growth. New York: Henry Holt, 1956. 9½″. Pp. 411. $5.00.

[To be reviewed.]

FISHER (R. M.) (Ed.). The Metropolis in Modern Life. Columbia University Bicentennial Conference Series. Garden City, New York: Doubleday, 1955. 9½″. Pp. 401. $6.00.

[This contains the proceedings of a conference held in connection with the Bicentennial Celebration of Columbia University. Sociological, political, economic, legal and religious aspects of urban development are among the subjects discussed. The papers on economic aspects are "Economic Efficiency in the Metropolis," by P. Sargant Florence, and "Efficiency and the Location of Urban Activities," by Richard U. Ratcliff.]

GREEN (J. F.). The United Nations and Human Rights. Washington, D.C.: The Brookings Institution, 1956. 9″. Pp. 194. $1.50.

[This is one of a series of studies of the United Nations projected by the Brookings Institution. It describes attempts to define human rights and the controversies aroused by the draft covenants that have been put forward in order to define more closely the general intentions of the United Nations charter. An account is also given of the action taken in the United Nations to safeguard human rights in specific cases that have arisen.]

GROSSMANN (K. R.). Germany's Moral Debt. The German–Israel Agreement. Washington, D.C.: Public Affairs Press, 1955. 9″. Pp. 71. $2.00.

[This is a brief history of the negotations that led up to the Luxemburg agreement of 1953. Under this agreement West Germany agreed to make reparation payments to Israel over a period of twelve to fourteen years in compensation for the material losses suffered by Jews at the hands of the Nazis. About half the text of the booklet is occupied by a reprint of the agreement and other documents.]

HABERLER (G.). A Survey of International Trade Theory. Special Papers in International Economics, No. 1. Princeton, New Jersey: International Finance Section, Princeton University, 1955. 9″. Pp. 68.

[Economists interested in international-trade theory will be grateful to the International Finance Section of the Department of Economics and Sociology at Princeton University for making available this English version of Professor Haberler's contribution to the *Handwörterbuch der Sozialwissenschaften*. The survey explains the separate existence of international-trade theory, and outlines the classical theory of comparative costs and international values, before discussing modern developments in the pure theory, the terms of trade, the balance-of-payments mechanism and the theory of international trade policy. Much material is lucidly compressed in a short space, at a more elementary level than Metzler's contribution to the first *Survey of Contemporary Economics*; and a useful bibliography is appended. There are two or three minor points on which others might not agree with Professor Haberler: on p. 19, the restrictiveness of the assumptions required for factor-price equalisation is surely understated on a reasonable interpretation of the writings of Lerner and Pearce; and on p. 47 n. 2 the multiplier stability conditions are surely not quite as stated. The chapter on the balance-of-payments mechanism might perhaps have benefited by more reference to the contributions of Meade and Alexander. The author seems, moreover, to have made more generous concessions to the protectionists than are strictly required by modern welfare economists and policy theory: departure from ideal competitive conditions, ideal income distribution or full employment

justifies intervention of some kind, but interference with the freedom of international trade is generally a second-best policy which must be justified on practical rather than theoretical grounds. Nevertheless, the survey combines a remarkably high standard of reliability with a scholarly sense of the continuity of the subject, and should prove an extremely useful introduction for students.]

MEADE (J. E.). The Belgium–Luxembourg Economic Union, 1921–1939. Lessons from an early experiment. Essays in International Finance, No. 25. Princeton, New Jersey: International Finance Section, Princeton University, 1956. 9″. Pp. 41.

[This has been prepared as an introduction to a larger work on the Benelux Economic Union which Professor Meade is engaged on. The economic union between Belgium and Luxembourg between the wars is commonly considered to have worked well. Professor Meade examines the reasons for this success and describes the difficulties that were encountered and the respects in which the principles of full economic union had to be departed from. The difference between the size of the participating countries greatly eased a number of problems, in his view: Luxembourg was willing to fall in line with Belgian arrangements to a large extent, and the Belgians on their side were able to make concessions where required without their much larger economy suffering any appreciable damage. It is interesting to note that in the one industry where the scale of production was comparable in the two countries—iron and steel—an unusual amount of difficulty and resistance to the application of the principles of union was experienced. Exceptional treatment had also to be granted to a number of other industries, notably agriculture. One reason for this was that before 1914 Luxembourg, but not Belgium, had been a member of the German Zollverein, and the transfer of the economic link from Germany to Belgium involved considerable readaptation. In some industries complete readaptation was impossible or unacceptable. The author also emphasises the importance of the existence of a common currency (the Belgian franc) within the area in preventing the occurrence of any balance-of-payments problems and so smoothing the working of the union.]

NADWORNY (M. J.). Scientific Management and the Unions, 1900–1932. A historical analysis. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1956. 8½″. Pp. 187. 30*s*.

[This monograph traces the history of the relations between organised labour in the United States and the "scientific management" movement associated with the name of Frederick W. Taylor. Up till the First World War the relations were frankly hostile on both sides, but a marked change came about in the 1920s. In that decade labour unions were generally on the defensive, and one of the means by which labour leaders sought to make unionism more acceptable to businessmen was by adopting a co-operative attitude towards proposals designed to increase efficiency. At the same time the exponents of scientific management were moving away from the more rigid doctrines of their founder and were coming to appreciate more clearly that improvements in efficiency depended on satisfactory relations between management and the worker. In the course of developing his main theme, the author provides what is in effect a survey of the evolution of the scientific management movement generally. He shows how it came about that by the 1930s, although many of Taylor's doctrines had passed into general acceptance, they had in the process become diluted and combined with ideas stemming from different sources in such a way that scientific management had ceased to be the self-contained and distinctive philosophy that it had been in its early days.]

O'CONNOR (H.). The Empire of Oil. New York: Monthly Review Press, 1955. 8½″. Pp. 372. $5.00.

[This survey of the American oil industry, with briefer treatment of the oil industry in the rest of the world, is written in the radical tradition that is now so out of fashion in the United States. It contains a great deal of information in highly readable form. The general approach and the slashing style are similar to, say, Matthew Josephson's *Robber Barons*. It is well-informed, hard-hitting journalism, for the most part, rather than economic analysis in the academic sense. A good many statistical data are scattered through the text, but they are mostly used for purposes of illustration rather than submitted to systematic analysis. Granted the sort of book the author set out to write, the job has been very well done. And with this industry, more perhaps than with any other, there is surely room for such an approach as that which Mr. O'Connor has chosen—an approach which places the emphasis less on the purely economic issues and more on questions of power and politics.]

ORNATI (O. A.). Jobs and Workers in India. Cornell International Industrial and Labor Relations Reports, No. 3. Ithaca, New York: Institute of International Industrial and Labor Relations, Cornell University, 1955. 9″. Pp. v + 215. $4.00

[This is designed as a hand-book of information about the problems of industrial labour in India. The main emphasis is therefore on facts rather than interpretation. The topics covered include the growth of industrial employment, wages and working conditions, labour organisation and collective bargaining.]

PARNES (H. S.). Union Strike Votes. Current practice and proposed controls. Princeton, New Jersey: Industrial Relations Section, Princeton University, 1956. 9½". Pp. 141. $3.00.

[Proposals have recently been made in the United States that strikes should not be permitted unless sanctioned by a majority of the workers affected in a secret ballot conducted under government auspices. Professor Parnes here provides an analysis of the issues involved and an account of past experience bearing on the question. A large part of his study is taken up with a description of the strike vote procedure actually adopted by unions. He finds little to support the allegation that workers are often pushed into strikes against their will by union leaders. Isolated instances of this may occur, and in voting on strike proposals workers are no doubt influenced by considerations of loyalty to their leaders; but at the same time no union leader would normally instigate a strike if he felt it lacked general support, simply because in such circumstances it would be unlikely to succeed. On the general principle involved by proposals for compulsory strike vote legislation, Professor Parnes points out that it is not always clear whether the purpose is to make strikes more difficult to call and thereby diminish the powers of unions or whether it is to secure more democratic control of union decisions. The "democracy" argument does not, he suggests, provide an adequate basis for the proposed legislation. In the first place there is no obvious reason why different criteria of democracy should be adopted in trade unions from those adopted in other elective institutions, such as government and business corporations. In the second place, if it is really desirable that the strike issue should be directly controlled by the rank and file of workers, provision should surely be made for workers to engage in a strike against the advice of their union leaders if a majority of them wish to. Needless to say, this is not provided for in the legislation that has been proposed.]

ROBINSON (M. A.), MORTON (H. C.) and CALDERWOOD (J. D.). An Introduction to Economic Reasoning. Washington, D.C.: The Brookings Institution, 1956. 9½". Pp. 335.

[To be reviewed.]

RUSSELL SAGE FOUNDATION. Annual Report, 1954–55. New York: Russell Sage Foundation (505 Park Avenue, New York 22), 1955. 9". Pp. 54.

[The progress of the various activities supported by the Foundation is reviewed. A large proportion of the Foundation's projects are concerned with the utilisation in professional practice (health, social welfare, education, government) of lessons learnt in the social sciences (social psychology, social anthropology, sociology).]

SELTZER (L. H.). Interest as a Source of Personal Income and Tax Revenue. National Bureau of Economic Research, Occasional Paper 51. New York: National Bureau of Economic Research, 1956. 9½". Pp. 82. $1.25.

[This is reprinted from the *Journal of the American Statistical Association*. The author presents data indicating the proportion of personal incomes derived from interest (as distinguished from dividends) in the United States between 1919 and the present time, together with similar data about tax revenues derived from interest incomes. The paper arose out of a larger study on the personal income tax. In seeking to explain the trends revealed by his data, the author considers the effect of movements in interest rates; the attractiveness of fixed-interest securities compared with other forms of asset both to borrower and lender (this being a good deal influenced by tax considerations); and the increasing proportion of fixed-interest securities held by institutions.]

SCHULTZ (G. P.) and BALDWIN (G. B.). Automation. A new dimension to old problems. Washington, D.C.: Public Affairs Press, 1955. 9". Pp. 20. $1.00.

[The authors describe what is meant by automation and the probable extent of its application in the near future. "As the first Industrial Revolution gave men radically new forms and applications of *energy* and *power*, this second Industrial Revolution promises to provide them with radically new methods for exercising *control* over processes and operations." They then go on to consider the effect of automation on industrial relations, particularly with regard to existing skill requirements and seniority rules and the wage differentials associated with them. They point out that in office occupations, where automation is likely to have its chief immediate application, the difficulties of adjustment should not be too great, since there long-service employees normally comprise a small proportion of the labour-force.]

THOMSON (C. A. H.). Television and Presidential Politics. The experience in 1952 and the problems ahead. Washington, D.C.: The Brookings Institution, 1956. 9". Pp. 173. $1.50.

[The author discusses the part played by television in the presidential election of 1952 and the prospects for 1956. He describes the various controversies that have arisen about the rights and duties of the television industry to provide coverage of political events, and makes a number of

recommendations. He admits that little reliable information is yet available about the political impact of television, but he suggests that potentially it is a most valuable source of contact between politicians and the public, and should contribute both to political education and to politicians' responsiveness to public opinion.]

WENDT (P. F.). The Role of the Federal Government in Housing. National Economic Problems, No. 460. Washington, D.C.: American Enterprise Association, 1956. 9″. Pp. 48. $1.00.

[The author is Professor of Finance at the University of California at Berkeley. He traces first the very diverse objectives that the federal government has at various times sought to attain by intervention in the field of housing—slum clearance, creation of employment, housing war workers and veterans. He then analyses the consequences of what he considers to have been the too liberal system of mortgage guarantees and other encouragement to building that has been adopted by the federal government since the war. Looking at the future, the author admits that the problem of slum clearance is a serious one, but he regards it as essentially a matter for state and local government. Moreover, he maintains that the solution of this problem has been made more difficult by the dogma that slum dwellers should be rehoused in newly-built accommodation rather than be induced to " filter up " into existing dwellings vacated by higher income groups.]

French

MARCZEWSKI (J.). Planification et Croissance Économique des Démocraties Populaires. Vol. I: Analyse Historique. Vol. II: Analyse Économique. Paris: Presses Universitaires de France, 1956. 9″. Vol. I: pp. 312; Fr. 1200. Vol. II: pp. 313 + 572; Fr. 900.

[To be reviewed.]

German

ALBRECHT (G.). Sozial Politik. Göttingen: Vandenhoeck & Ruprecht, 1955. 9½″. Pp. 242. DM. 14.80.

[This book is for the greater part concerned with the various attempts made to ameliorate the conditions of life of working people in Germany. It is divided into two principal sections. After a brief theoretical discussion, the first section deals with the history of those who attempted to improve their lot by banding together in consumers' associations, co-operatives and trade unions. Unfortunately, no more than three pages have been allotted to the very interesting problems of the reconstructed trade unions after 1945. The second and major section of the book deals systematically with the several topics of protective labour legislation, including safeguards for special groups (women, juveniles and homeworkers), the regulation of hours and conditions of work, safety and the period of notice. The characteristics of German social insurance and its prospects are discussed in another chapter. A further chapter covers employment exchanges, youth-employment counselling, unemployment assistance, political measures to regulate wages contracts and settlements by arbitration. The last chapter in the book will probably contain most of interest to English readers, since it concerns the experiments in works councils and limited workers' control which are now being carried out in Germany and, in a different way, in Jugoslavia. The book contains a full bibliography.]

BAADE (F.). Obst und Gemüse in Westeuropa. Erzeugung und marktverflechtung. Hiltrup bei Münster: Landwirtschaftsverlag, 1955. 9½″. Pp. 205. DM. 21.00

[This is a compendium of statistics relating to fruit and vegetable production in Western Europe. For each of eleven vegetables and fifteen fruits, details are given of the amounts grown in each of some of five hundred " counties " into which Europe is here divided. Information is also given on the quantities imported and exported by each country. The whole is excellently illustrated with maps showing the density of growth of the various products, and with many time-series charts relating to the years 1929–53.]

GOLDSCHMIDT (D.). Stahl und Staat. Eine wirtschaftssoziologische untersuchung zum Britischen nationalisierungsexperiment. Stuttgart and Düsseldorf: Ring-Verlag, 1956. 9″. Pp. 290. DM. 27.80.

[To be reviewed.]

Swiss

WEBER (K.). Dividendenpolitik. Zürich: Schulthess, 1955. 9″. Pp. 197. S.Fr. 16.

[Companies make distributions to their shareholders in various ways: by rights issues, bonus issues, capital distributions and, not least, by straightforward dividend distributions. The latter may fluctuate as widely as profits, or be nearly as stable as debenture interest, depending on the policy of the company. Dr. Weber discusses here, in general terms, the policies that may be followed by a company and illustrates his remarks extensively with examples of the larger firms in Europe and the United States.]

Official

CANADIAN

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. Report Concerning an Alleged Combine in the Manufacture, Distribution and Sale of Transmission and Conveyor Equipment and Related Products. Ottawa: Department of Justice, 1955. 10″. Pp. 143.

[It is found that members of the Conveyor and Power Transmission Institute of Canada have engaged in common pricing arrangements which have had the effect of interfering with competition to the detriment of the public interest.]

INTERNATIONAL

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. The Economic Development of Malaya. Report of a mission organized by the Bank at the request of the Governments of the Federation of Malaya, the Crown Colony of Singapore and the United Kingdom. Baltimore, Maryland: The Johns Hopkins Press (London: Geoffrey Cumberlege), 1956. 9¼″. Pp. 707. 60*s*.

[Reviewed in this issue.]

INTERNATIONAL LABOUR ORGANISATION. National Housing Programmes and Full Employment. Report prepared by the International Labour Office for the fifth session of the Building, Civil Engineering and Public Works Committee. Geneva: International Labour Office, 1955. 11½″. Pp. 124.

[This report stresses the difference between the problems involved by housing programmes in advanced and backward countries. In advanced countries one of the chief problems, it is suggested, is to mitigate the violence of the fluctuations that have characterised the building industry in the past; national housing programmes must be adapted to take account of this problem of instability and of the relation between building activity and the general level of employment. In backward countries, on the other hand, instability is not such a difficulty, but the conjunction of widespread underemployment and acute shortage of saving raises other problems. The report is devoted to a consideration of these issues and of certain others that are common to all countries, such as questions of town planning and the need to reduce building costs.]

UNITED NATIONS. Economic Survey of Europe in 1955, including studies of investment problems and policies of European countries and labour market problems in western Europe. Prepared by the Research and Planning Division, Economic Commission for Europe. Geneva: United Nations, 1956. 11″. Pp. 247 and appendices. 18*s*.

[To be reviewed.]

UNITED NATIONS. The European Housing Situation. Prepared by the secretariat of the Economic Commission for Europe. Geneva: United Nations, 1956. 11″. Pp. 56. 3*s*. 6*d*.

[This useful work of reference brings together data on the housing situations in all the countries in Europe for which information is available. Where possible, particulars are given of the number of dwellings, the number of rooms and the total floor space, viewed in relation to the size, age-composition and marital structure of the population; the supply of electricity, running water and other amenities; the proportion of very old houses; regional variations in the housing situation, especially between town and country; and future trends, taking account of demographic prospects, the present rate of building and computed replacement needs. Extensive particulars are given about the housing situation in the U.S.S.R., some of which were made available by the Soviet

authorities specially for the purpose of the survey. The concluding chapter provides some interesting international comparisons. On the criterion of "rooms per thousand inhabitants," the United Kingdom comes third from the top, after Belgium and Switzerland. A noteworthy conclusion is that "in virtually no country would the continuation of housebuilding on the 1954 level for about the next ten years be excessive in relation to reasonable requirements."]

UNITED NATIONS. Non-ferrous Metals in Under-developed Countries. New York: United Nations Department of Economic and Social Affairs, 1956. 11″. Pp. 129. 10*s*. 6*d*.

[The four main chapters of this report consist of an analysis of the present patterns of world consumption, production and trade in non-ferrous metals; an account of international control schemes in these products; a survey of the present role of mining, smelting and refining in the economies of under-developed countries; and an analysis of the developmental significance of mining and smelting for these countries.]

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION. Social Sciences Publications. Bibliographical List No. 4 of social sciences papers published in the Middle East. Cairo: Middle East Science Cooperation Office, 1954. 10½″. Pp. 46.

[536 items are enumerated, including both books and articles in periodicals. The arrangement is by subject, with an index of authors.]

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Yearbook of Forest Products Statistics, 1955. Rome: F.A.O., 1956. 11″. Pp. 161. 12*s*. 6*d*.

[The statistical tables are preceded by a brief review of the salient features of the world situation in forest products in 1954.]

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Weltwirtschaftliches Archiv, 1954

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